

AD-A193 342

COMPLETION OF EMBANKMENT AND SPILLWAY JOE POOL LAKE
MOUNTAIN CREEK TEXAS (U) ARMY ENGINEER DISTRICT FORT
WORTH TX A J MARR FEB 88

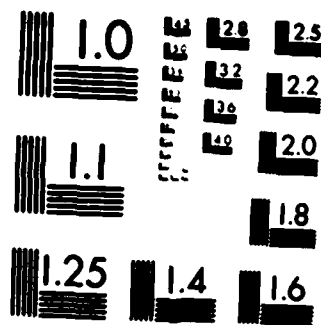
1/3

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A



AD-A193 342



US Army Corps
of Engineers
Fort Worth District

FINAL
FOUNDATION
REPORT

COMPLETION OF
EMBANKMENT AND SPILLWAY
JOE POOL LAKE
MOUNTAIN CREEK, TEXAS

DTIC
ELECTE
APR 01 1988
S CPH D

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

February 1988

88 3 14 14 8

**CORPS OF ENGINEERS
PORT WORTH DISTRICT, TEXAS**

**FINAL
FOUNDATION REPORT
COMPLETION OF EMBANKMENT AND SPILLWAY**

JOE POOL LAKE

**-BY-
ALAN J. MARR,
ENGINEERING GEOLOGY SECTION**

FEBRUARY 1988

1

PREFACE

This report was prepared in the Geotechnical Branch, Engineering Division, Fort Worth District. The report was authored by Project Geologist, Alan J. Marr, under the supervision of the Chief of the Engineering Geology Section, Robert C. Behm, and the Chief of the Geotechnical Branch, Melvin G. Green.

District Engineers for the Fort Worth District during construction of Joe Pool Lake were Colonel Donald Palladino and Colonel Albert J. Genetti, Jr. Mr. Shigeru Fujiwara was Chief of the Engineering Division. Messrs. Gary Hames, Mel Sadler, Sam Coleman, and James Leslie, each served as Resident Engineer during consecutive periods of construction. Area Engineer during construction was Mr. James D. Leslie.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By <i>per letter</i>	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
<i>A-1</i>	

TABLE OF CONTENTS

<u>Para No.</u>	<u>Paragraph Title</u>	<u>Page No.</u>
<u>I INTRODUCTION</u>		
1	Project Location and Description	1
2	Construction Authority	1
3	Purpose of the Report	4
4	Project History	4
5	The Contracts	7
	(a) Outlet Works and Initial Embankment	7
	(b) Completion of Embankment, Spillway, and Outlet Works	7
6	Quality Control	7
7	Contract Supervision	7
<u>II FOUNDATION EXPLORATIONS</u>		
1	Investigations Prior to Construction	9
2	Investigations During Construction	9
<u>III GEOLOGY</u>		
1	Physiography and Regional Geology	11
2	Geology of the Dam Site	12
	(a) Description of the Overburden	12
	(b) Bedrock Stratigraphy	14
	(c) Bedrock Lithology	15
	(d) Bedrock Structure	15
	(1) Right Abutment Deep Inspection Trench	17
	(2) Spillway	20
	(e) Bedrock Weathering	21
	(f) Ground Water	22
3	Engineering Characteristics of the Overburden and Primary Materials	22
	(a) Overburden	23
	(b) Primary Materials	24
<u>IV EXCAVATION PROCEDURES</u>		
1	Inspection Trench	25
2	Spillway	30
3	Foundation Protection	31
4	Foundation Preparation	32

TABLE OF CONTENTS (cont'd)

<u>Para No.</u>	<u>Paragraph Title</u>	<u>Page No.</u>
	<u>V FOUNDATION ANCHORS</u>	
1	General	34
2	Equipment	34
3	Procedures	34
4	Pull-Out Tests	35
	<u>VI CHARACTER OF THE FOUNDATION</u>	
1	General	37
2	Character of Primary Materials	37
3	Character of Overburden Materials	38
	<u>VII FOUNDATION INSTRUMENTATION</u>	
1	General	40
2	Piezometers	40
	(a) General	40
	(b) Embankment Station 16+00	40
	(c) Embankment Station 38+30	40
	(d) Embankment Station 50+00	41
	(e) Embankment Station 63+00	41
	(f) Embankment Station 99+50	41
	(g) Embankment Station 100+50	41
	(h) Conclusions from Piezometer	41
	Observations to Date	41
3	Settlement and Deep Settlement Plates	42
	(a) General	42
	(b) Floodplain	43
	(c) Spillway	43
4	Outlet Works Reference Pins	44
5	Spillway Reference Marks	44
6	Evaluation	44
	<u>VIII FUTURE CONSIDERATIONS</u>	
1	Conditions That Could Cause Problems	45
2	Recommendations	45
	<u>PLATES</u>	
1	Lake Map and Vicinity Map	
2	General Plan	
3	Areal Geology Map	
4	Plan of Borings I	
5	Plan of Borings II	
6	Plan of Borings III	

TABLE OF CONTENTS (cont'd)

<u>Plate No.</u>	<u>Title</u>
7	Plan of Borings IV
8	Geologic Profile - Embankment Centerline (Sta 0+00 to 62+00)
9	Geologic Profile - Embankment Centerline (Sta 62+00 to 128+00)
10	Geologic Profile - Embankment Centerline (Sta 128+00 to 190+00)
11	Geologic Profile - Embankment Centerline (Sta 190+00 to 225+00)
12	Typical Embankment Section
13	Geologic Profile - Embankment Centerline (Sta 0+00 to 22+00)
14	Inspection Trench Map - Sta 0+00 to 8+00
15	Right Abutment Deep Inspection Trench - Plan and Profile Sta 8+00 to 19+00
16	Inspection Trench Map - Sta 19+00 to 39+00
17	Inspection Trench Map - Sta 39+00 to 55+00
18	Inspection Trench Map - Sta 55+00 to 65+00
19	Inspection Trench Map - Sta 65+00 to 86+00
20	Inspection Trench Map - Sta 86+00 to 106+00
21	Inspection Trench Map - Sta 106+00 to 126+00
22	Inspection Trench Map - Sta 126+00 to 146+00
23	Inspection Trench Map - Sta 146+00 to 166+00
24	Inspection Trench Map - Sta 166+00 to 186+00
25	Inspection Trench Map - Sta 186+00 to 206+00
26	Inspection Trench Map - Sta 206+00 to 217+30
27	Spillway Excavation Plan
28	Spillway Plan and Profile
29	Spillway Excavation Map
30	Geologic Profile - Spillway Centerline
31	Plan and Sections - Spillway Monoliths Nos 14 and 15
32	As-Built Foundation Plan - Outlet Works
33	Plan of Instrumentation
34	Record of Foundation Approval - Right Abutment Deep Inspection Trench
35	Record of Foundation Approval - Spillway
36	Logs of Borings - Calyx Hole 1, 2, and 3
37	Logs of Borings - 6DC-36 and 6DC-37
38	Logs of Borings - 6DC-38 and 6DC-39
39	Logs of Borings - 6DC-40 and 6DC-41
40	Logs of Borings - 6DC-41
41	Logs of Borings - 8A6C-42 and 8A6C-43
42	Logs of Borings - 8A6C-44 and 8A6C-45
43	Logs of Borings - 8A6C-46 and 8A6C-47
44	Logs of Borings - 8A6C-50 and 8A6C-52

TABLE OF CONTENTS (cont'd)

<u>Plate No.</u>	<u>Title</u>	<u>Page No.</u>
45	Logs of Borings - 8A6C-53 and 8A6C-54	
46	Logs of Borings - 8A6C-54 and 8A6C-55	
47	Logs of Borings - 6DC-56	
48	Logs of Borings - 8A6C-57	
49	Logs of Borings - 6DC-58	
50	Logs of Borings - 8A6C-59 and 8A6C-63	
51	Logs of Borings - 6DC-60, 8A-61, 8A-62, and 6D-91	
52	Logs of Borings - 8A6C-3F-67, 8A6C-68, and 8A6C-69	
53	Logs of Borings - 8A6C-70 and 8A6C-71	
54	Logs of Borings - 8A6C-71, 6DC3F-72, and 8A3F-73	
55	Logs of Borings - 8A6C-75, 8A6C-76, and 8A6C-77	
56	Logs of Borings - 6DC-78 and 8A-79	
57	Logs of Borings - 8A-80 and 6D-81	
58	Logs of Borings - 8A-82, 8A-83, and 8A-84	
59	Logs of Borings - 6D-85, 8A-87, and 6D-88	
60	Logs of Borings - 8A-89, 6DC-90, 8A-92, and 8A-93	
61	Logs of Borings - 8A-94, 6D-95, 8A-96, and 8A-97	
62	Logs of Borings - 8A-99, 8A-100, 8A-513, and 6DC-514	
63	Logs of Borings - 8A6C-300 and 8A6C-301	
64	Logs of Borings - 8A6C-302, 8A-303, and 8A-304	
65	Logs of Borings - 6DC-573, 6DC-576, 6DC-577, and 6DC-578	
66	Logs of Borings - 6DC-515, 8A-516, 6DC-517, and 8A6C-524	
67	Logs of Borings - 8A6C-525, 8A-526, 8A-527, and 8A-528	
68	Logs of Borings - 8A-529, 8A-530, 6D-531, and 8A-532	
69	Logs of Borings - 8A-533, 8A-534, and 6DC-535	
70	Logs of Borings - 6DC-536, 6DC-557, and 8A6C-574	
71	Logs of Borings - 8A-584, 8A-585, and 8A6C-587	
72	Logs of Borings - 8A6C-588, 8A6C-590, and 6DC-596	
73	Logs of Borings - 8A-700, 6DC-701, and 6DC-702	

ILLUSTRATIONS

<u>Figure No.</u>	<u>Title</u>	
1	Aerial View of Joe Pool Dam and Lake Project	2
2	Spillway - Joe Pool Dam	3
3	Outlet Works - Joe Pool Dam	3
4	Ammonites Swallovi	16
5	Right Abutment Deep Inspection Trench, Looking West	26
6	Right Abutment Deep Inspection Trench, Looking East	26
7	Excavation Slope Being Prepared for Backfill 27 August 1982	118
8	Excavation Slope Being Prepared for Backfill 31 August 1982	118

TABLE OF CONTENTS (cont'd)

<u>Figure No.</u>	<u>Title</u>	
9	Excavation Slope Being Prepared for Backfill 1 September 1982	119
10	Excavation Slope Being Prepared for Backfill 2 September 1982	119
11	Excavation Slope Being Cut to Final Grade 20 November 1982	120
12	Excavation Slope Being Cut to Final Grade 20 November 1982	120
13	Excavation in Stream Channel, Looking West	121
14	Excavation in Stream Channel, Looking East	121
15	Backfill Compaction in Stream Channel, Looking South	122
16	Embankment Inspection Trench - Sta 36+00	123
17	Embankment Inspection Trench - Sta 43+00	123
18	Embankment Inspection Trench - Sta 51+50	124
19	Embankment Inspection Trench - Sta 53+50	124
20	Embankment Inspection Trench - Sta 61+00	125
21	Embankment Inspection Trench - Sta 65+00	125
22	Embankment Inspection Trench - Sta 71+00	126
23	Embankment Inspection Trench - Sta 71+25	126
24	Embankment Inspection Trench - Sta 85+00	127
25	Embankment Inspection Trench - Sta 88+00	127
26	Embankment Inspection Trench - Sta 88+50	128
27	Embankment Inspection Trench - Sta 95+00	128
28	Embankment Inspection Trench - Sta 95+50	129
29	Embankment Inspection Trench - Contact Fill/ Natural Ground	129
30	Embankment Inspection Trench - Sta 130+00	130
31	Embankment Inspection Trench - Sta 132+00	130
32	Embankment Inspection Trench - Sta 147+00	131
33	Embankment Inspection Trench - Sta 150+50	131
34	Embankment Inspection Trench - Sta 172+00	132
35	Embankment Inspection Trench - Sta 186+00	132
36	Embankment Inspection Trench - Sta 191+00	133
37	Embankment Inspection Trench - Sta 209+50	133
38	Embankment Inspection Trench - Sta 210+00	134
39	Spillway During Construction	135
40	Spillway Foundation Being Prepared for Backfill 9 April 1983	135
41	Spillway Foundation - Wall Footing 6 April 1983	136
42	Spillway Foundation 5 April 1983	137
43	Spillway Foundation 8 April 1983	137

TABLE OF CONTENTS (cont'd)

<u>Figure No.</u>	<u>Title</u>	<u>Page No.</u>
44	Spillway Foundation 9 April 1983	138
45	Spillway Foundation 9 April 1983	138
46	Spillway Foundation 11 April 1983	139
47	Spillway Foundation 12 April 1983	139
48	Spillway Foundation Key Trench 15 April 1983	140
49	Spillway Foundation End Sill Trench	141
50	Spillway Foundation End Sill Trench Pneumatic Concrete Failure	142
51	Excavation Adjacent to Spillway 3 March 1984	143
52	Foundation Adjacent to Spillway 3 March 1984	143
53	Excavation Adjacent to Spillway 18 April 1984	144
54	Foundation Adjacent to Spillway 18 April 1984	144
55	Foundation Adjacent to Spillway 7 February 1984	145
56	Foundation Anchor Pull-Out Test 15 April 1983	146
57	Drop Structure	147
58	Drop Structure Foundation 7 December 1982	147

I INTRODUCTION

1. **Project Location and Description.** The Joe Pool Dam and Lake¹ project is located in southwest Dallas County near Grand Prairie, Texas. The dam is located at river mile 11.2 on Mountain Creek, a tributary to the West Fork of the Trinity River. Location of the project is shown on Plate 1. The principal features of the Joe Pool Dam and Lake Project include: (1) a rolled earth-fill embankment and dike approximately 24,340 feet long having a maximum height of 108.5 feet above streambed and a crest width of 30 feet (Figure 1); (2) a service spillway perched in the left abutment at embankment station 100+00 having a concrete uncontrolled rectangular broadcrested weir 50 feet wide (Figure 2); and (3) a 10.5-foot diameter cut-and-cover outlet works conduit controlled by two 4.75 by 10.0-foot service gates (Figure 3). An additional feature included in the project was a channel which diverted eastbound surface runoff around the spillway stilling basin. A concrete drop structure (Figure 57) was constructed in the channel to control flow velocities in the channel. A general plan of the Joe Pool project is shown on Plate 2.

2. **Construction Authority.** Congressional authority for the construction of Joe Pool Dam and Lake is contained in Public Works - Rivers and Harbor Act, approved 27 October 1965 (Public Law 89-298)

¹ In December 1982, Public Law 97-400 was passed by Congress which officially changed the name of the project from Lakeview Lake to Joe Pool Lake. All previously published documents, design memorandums, plans, and specifications are entitled **Lakeview Lake** and will be referred to under the name **Lakeview Lake** in this report.



Figure 1. Aerial view of Joe Pool Dam and Lake Project.
(Looking southwest)

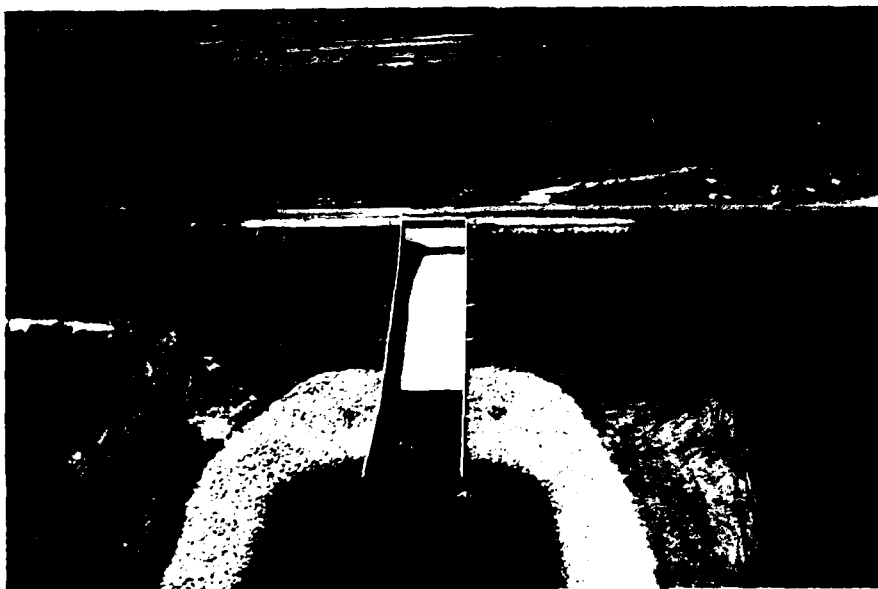


Figure 2. Spillway - Joe Pool Dam. (Looking upstream)

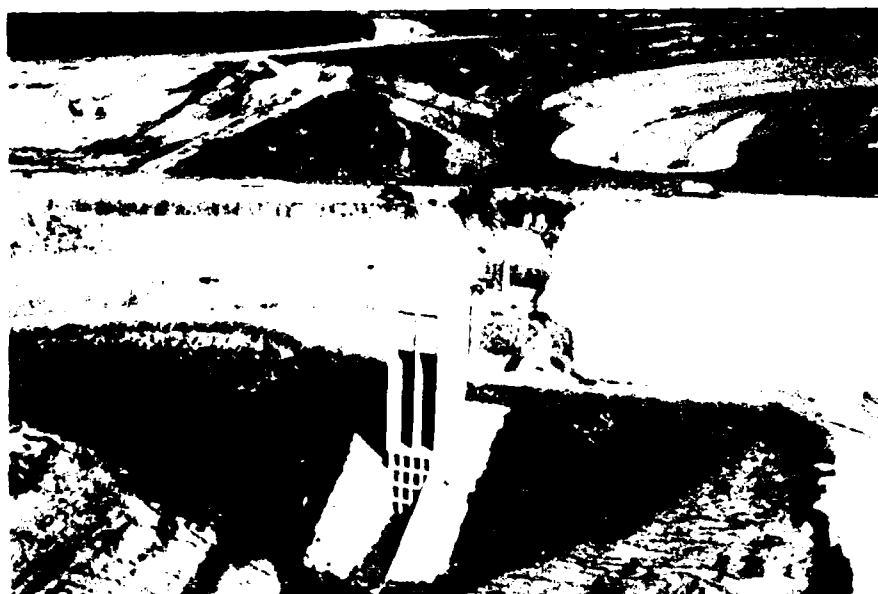


Figure 3. Outlet Works - Joe Pool Dam. (Looking downstream)

in accordance with the overall plan of improvement of the Trinity River Basin, Texas, as outlined in House Document No. 276 (89th Congress, 1st Session).

3. Purpose of the Report. This report was prepared in accordance with requirements as set forth by the Office, Chief of Engineers in ER 1110-1-1801. This is the second of two reports recording the foundation history of the appurtenant structural features of the Joe Pool project. The subject of this report is the embankment and spillway features of the project. The outlet works portion of the project was addressed in **THE JOE POOL LAKE OUTLET WORKS FINAL FOUNDATION REPORT** published in June 1983.

The purpose of this report is to provide a complete record of foundation conditions encountered during construction. Information contained in this report will be valuable when evaluating (1) necessary remedial action required to prevent or repair any problems resulting from foundation deficiencies; (2) contractor claims related to foundation conditions or alleged change of condition; and (3) planning and design of future comparable construction projects.

A copy of this report should be included in the permanent records maintained at the project office.

4. Project History. The Project Document Plan (House Document No. 276, 89th Congress, 1st Session) recommended the construction of the project at river mile 7.2 on Mountain Creek. However, upon initiation of advance planning studies for the project, it was found

that the Texas Highway Department had acquired land for the development of Interstate Highway 20 crossing Mountain Creek about one-half mile upstream from the site. The decision was made to move the dam site upstream from the interstate highway in order to avoid construction of a bridge or a costly relocation. Beginning in 1960, seven dam site locations were studied including four of them with foundation boring programs.

Fort Worth District submitted **Design Memorandum No. 4 - General** in December 1969 which established the location of the project at river mile 11.2 on Mountain Creek. The project plan in **Design Memorandum No. 4** provided for an earthfill embankment with an uncontrolled spillway located on the right abutment at embankment station 4+30 and a cut-and-cover outlet works located at embankment station 12+25, near the right abutment. Extensive subsurface investigations at the spillway and outlet works sites revealed the presence of unfavorable subsurface geologic conditions at both locations. Deep excavations would be required through unstable bedrock, necessitating the design of very flat excavation slopes in order to assure stability. In their review comments on **Design Memorandum No. 4**, it was recommended by the Office of Chief of Engineers that consideration be given to resiting the two structures. Subsequently, the Fort Worth District recommended that the structures be relocated at their present sites. In November 1978, Fort Worth submitted **Design Memorandum No. 24 - Outlet Works** which located the

outlet works on the main embankment section at station 76+00. **Design Memorandum No. 9 - Embankment and Spillway**, issued in April 1980, established the location of the spillway structure on the left embankment section at its present location, station 100+00.

Construction of Joe Pool Dam and Lake commenced with the award, on 19 November 1979, of a contract for the construction of the outlet works and two partial embankments. The initial contract included a floodplain embankment to elevation 514.0 from embankment station 27+00 to station 49+00; a preload embankment to elevation 564.5 from station 95+00 to station 105+00 (spillway location); the outlet works tower and associated structures, excluding the service bridge; and portions of the outlet works approach and discharge channels. Work was completed on this contract on 4 June 1982.

On 30 September 1981, Fort Worth District awarded the contract for completion of the project. Major work included in the completion contract included completion of the earthfill embankment, construction of the outlet works service bridge, construction of the spillway, and construction of the roadway atop the embankment. Other work included in this contract was the construction of the drop structure near the spillway, and completion of the outlet works approach and discharge channels. With the exception of some turfing, work on this contract was completed in April 1986.

Impoundment of Joe Pool Lake began on 7 January 1986, with conservation pool expected to be reached sometime during 1988.

Opening of the reservoir to the public is scheduled for 1988.

5. The Contracts. Joe Pool Dam and Lake was constructed under two major contracts. The contractors and pertinent data information related to the two major construction contracts are listed below:

a. Outlet Works and Initial Embankment.

Contract No.	DACW63-80-C-009
Contractor:	The Lane Construction Corporation, Meridian, CT
Bid:	\$11,200,632.50
Contract Awarded:	19 November 1979
Notice to Proceed:	30 November 1979
Acknowledged:	6 December 1979
Work Commenced:	7 December 1979
Work Completed:	4 June 1982

b. Completion of Embankment, Spillway, and Outlet Works.

Contract No.:	DACW63-81-C-0191
Contractor:	Servidone Construction Corporation, Castleton, NY
Bid:	\$25,781,338.18
Contract Awarded:	30 September 1981
Notice to Proceed:	18 May 1982
Acknowledged:	18 May 1982
Work Commenced:	1 June 1982
Work Completed:	April 1986

NOTE: A bid protest issued by one of the bidders delayed issuance of the notice to proceed until the protest was denied.

6. Quality Control. The quality control organization was furnished and compensated by the Contractor. Mr. Claude Wise was the quality control supervisor during both major contracts.

7. Contract Supervision. The Joe Pool Dam and Lake project was constructed under the immediate supervision of the District Engineer, U.S. Army Engineer District, Fort Worth, Texas. The District

Engineer's representative for administration of the contract was Mr. James D. Leslie, Area Engineer, North Texas Area Office. Field inspection was administered by the Joe Pool Project Office, which was located adjacent to the North Texas Area Office at the project site. The following personnel participated in administering the contract:

Project Engineer

Mr. Gary Hames	November 1979 - July 1981
Mr. Mel Sadler	July 1981 - August 1982
Mr. Sam Coleman	August 1982 - October 1984
Mr. Bill Gibbons	October 1984 - present
(Acting Project Engineer)	

Laboratory Supervisor

Mr. Willie Hudson	November 1979 - June 1982
Mr. David Hamlet	June 1982 - conclusion

II FOUNDATION EXPLORATIONS

1. Investigations Prior to Construction. Prior to final site selection a total of seven dam sites were investigated, four by subsurface explorations. Investigations at the selected site were initiated in 1969. Approximately 500 borings were drilled at the site, ranging in depths from 10 to 200 feet. The borings consisted predominantly of 8-inch flight auger, 6-inch Densison barrel, and 6-inch core. Several 3-inch fishtail borings were drilled for geophysical logging surveys to assess the presence and trends of structural features. Three 36-inch calyx holes were drilled at the right abutment. Ground-water levels were monitored at many of the boring locations by installing slotted plastic (PVC) casing in the boreholes.

Two spillway and outlet works sites were explored. Extensive subsurface explorations at the original sites of the spillway and outlet works on the right abutment revealed the presence of unsuitable geologic conditions. As a result of the investigations, it was determined that the two structures should not be located on the right abutment. Additional investigations resulted in the spillway and outlet works being resited at their present locations. Foundation boring locations are shown on Plates 4 through 7. Detailed logs of borings are presented on Plates 36 through 73.

2. Investigations During Construction. No unanticipated foundation

conditions or problems were encountered during construction.

Therefore, no additional investigations were required.

III GEOLOGY

1. Physiography and Regional Geology. The Joe Pool Dam and Lake project is located at the eastern edge of the Eagle Ford Prairie section of the Gulf Coastal Plain physiographic province. The dam site is characterized topographically by a moderately steep east (right) abutment, a relatively flat 5,000 feet-wide floodplain, and a gently sloping west (left) abutment.

A major topographic feature of the area is the White Rock escarpment located about one-half mile east of the right abutment of the dam. This north-northeast trending escarpment marks the easternmost limit of the Mountain Creek drainage area. Immediately west of the White Rock escarpment are numerous remnants of a small cuesta formed by a resistant limestone bed in the Eagle Ford Formation. The cuesta was subsequently eroded into a series of subrounded hills or remnants rising 30-60 feet above the present Mountain Creek valley. One of these hills forms the dam's moderately steep east abutment, while other similar remnants generally form the eastern shore of the reservoir area. Low, gently rolling topography forms the western boundary of the reservoir area.

Bedrock strata underlying the embankment and reservoir area consist of Upper Cretaceous units of the Eagle Ford Formation. The regional structure of these beds is monoclinal, resulting in a gentle dip southeastward toward the Gulf Coast. The maximum thickness of the Eagle Ford Formation at the dam site is 225 feet as indicated by

borings along the dam axis which penetrated the Eagle Ford to the underlying Woodbine Formation. Lithologically the Eagle Ford Formation consists predominantly of soft to moderately hard clay shale. An areal geology map is presented on Plate 3.

2. Geology of the Dam Site.

a. Description of the Overburden. Overburden consisting of Quaternary age alluvial and terrace deposits cover all bedrock at the dam site with the exception of some isolated areas on the right abutment where weathered bedrock has been exposed by hillside erosion. The deposits consist predominantly of clay, with heterogeneous assortments of silt, sand, and gravel either mixed in or occurring separately. Overburden materials encountered during preconstruction investigations and observed during construction in the shallow inspection trench were predominantly clays, sandy clays, and gravelly clays. Impure sand and gravel deposits are generally found near the base of the overburden unit. Along the embankment centerline the thickness of the overburden ranged from 3 feet at station 69+50 to a maximum of 55 feet in a buried stream channel at station 15+00. A geologic profile along the embankment centerline is presented on Plates 8 through 11.

Overburden deposits at the right abutment consist of 4 to 10 feet of clay, sandy clay, and gravelly clay locally cemented into a weak conglomerate. A buried stream channel is located at the base of the right abutment (Plate 13). The channel, whose bottom was about 55

feet below ground surface, at elevation 442, contained alluvium and colluvium consisting of clay with variable amounts of sand, gravel, reworked shale fragments, and chalky limestone fragments.

In the valley section of the embankment, between stations 17+00 and 65+00, the overburden consists of Recent floodplain deposits having an average thickness of 45 feet. In general, these deposits consist of 35 to 40 feet of medium to high plasticity clay underlain by 5 to 10 feet of semi-impervious clayey sand and gravel immediately overlying bedrock. Excavations within this unit in the vicinity of the old Mountain Creek channel (station 53+00 to 56+00) encountered pockets of organic materials and some water-bearing sand and gravel zones (Figures 13 and 14).

Quaternary terrace deposits mantle the bedrock from about station 65+00 to the west end of the dam. These deposits consist of sandy clay and clayey sand. Fairly clean sand with some gravel was noted from station 72+00 to 75+00 (Figure 22). This area was formerly the site of an old abandoned gravel pit. Average thickness of the terrace deposits is about 30 feet.

Plans and profiles showing the materials observed in the embankment centerline inspection trench are presented on Plates 14 through 26. Photographs of the materials exposed in the inspection trench are shown in Figures 16 through 38. Boring logs presented on Plates 36 through 73 provide detailed descriptions of overburden encountered during drilling investigations.

b. Bedrock Stratigraphy. Primary strata beneath the dam site belong to the Britton member of the Eagle Ford Formation, Upper Cretaceous in age. Thickness of the Eagle Ford ranges from about 80 feet at the west end of the dam to approximately 250 feet at the right abutment. Immediately underlying the Eagle Ford are the interbedded sand and clay shale strata of the Woodbine Formation.

The Britton member, which is the lowest (oldest) member of the Eagle Ford Formation, is divided into three units based on lithology. In ascending order they are: (1) the Lower Britton, Unit I; (2) the Lower Britton, Unit II; and (3) the Upper Britton. During construction of the dam, strata belonging to the Upper Britton Unit were exposed in excavations for the spillway, the diversion channel and drop structure, the outlet works, and in the deep inspection trench at the right abutment. The Lower Britton, Unit II, was exposed during excavation for the outlet works stilling basin. None of the construction excavations penetrated the Lower Britton, Unit I.

Along the embankment alignment, beds of the Upper Britton Unit lie directly beneath the overburden between stations 0+00 and 45+00, and from station 63+00 to 113+00. Overburden is supported by strata of the Lower Britton, Unit II, from station 45+00 to 63+00, and between stations 113+00 and 168+00. From station 168+00 to the west end of the embankment, overburden is underlain by beds belonging to the Lower Britton, Unit I. The bedrock units dip southeastward resulting in the older strata occurring nearer the surface

progressively westward, and the contacts between the units occurring at greater depths as they progress eastward. A geologic profile along the embankment centerline showing the bedrock stratigraphy is presented on Plates 8 through 11.

c. **Bedrock Lithology.** All foundation excavations performed during this contract, which included excavations for the deep inspection trench, the spillway, and the drop structure, were confined to strata of the Upper Britton member of the Eagle Ford Formation. The Upper Britton consists of soft to moderately hard, slightly calcareous, highly jointed and fractured bentonitic clay shale. Unweathered Upper Britton strata varies from gray to dark gray and was generally described as thin bedded. Individual layers were usually less than 1 foot in thickness and often exhibited a laminated appearance. Bentonite seams observed within the Upper Britton strata were less than 1 inch in thickness, and appeared as very fine-grained, ashey, light gray to bluish gray, changing to tan soon after exposure. No where in any of the excavations were these bentonite seams prominent or continuous enough to be considered as mappable units. Scattered zones or pockets of fossil debris were found throughout the Upper Britton Unit. However, with only a few exceptions, as shown in Figure 4, the fossil fragments were unidentifiable. The strata of the Upper Britton Unit also contained scattered discontinuous limestone and claystone concretions.

d. **Bedrock Structure.** The regional structure of the Eagle Ford



Figure 4. *Ammonites swallowi*. Well preserved specimen observed in the exposed clay shale surface adjacent to the spillway training wall. Scattered fossil shell fragments occasionally observed in Upper Britton Formation belong to above family.

Formation is monoclinal with dip of the strata to the east-southeast at approximately 50 feet per mile. In the area of Joe Pool Lake and eastward toward Dallas, strata of the Eagle Ford Formation and the overlying Austin Chalk Formation are extensively faulted. The majority of the faults are normal faults, occurring as a result of consolidation and differential settlement of individual beds. Typical displacement across a fault line is normally less than 15 feet. Several small displacement faults were noted in the area of Joe Pool Lake, either by direct observation within excavation areas, or as inferred from preconstruction electric log interpretations and 6-inch core sample inspection. A discussion of bedrock faulting examined in the major excavation areas follows:

(1) **Right Abutment Deep Inspection Trench.** Subsurface investigations along the dam site centerline at the right abutment revealed that the top of bedrock dropped abruptly into the floodplain due to the erosion and cutting action of an ancient buried stream channel located at the base of the abutment. The buried channel contained a maximum of 55 feet of alluvium and colluvium consisting of clay with variable amounts of sand, gravel, shale, and limestone fragments. The right abutment was also investigated as a potential site for the outlet works and spillway structures. However, these investigations revealed the presence of a large bedrock slump block, consisting of highly jointed, fractured and brecciated shale. The slump block is located downstream of the embankment centerline in the

area where the outlet works stilling basin would be located. Rather than requiring deep excavations through unstable bedrock for the outlet works and spillway stilling basins, both structures were resited at their present locations.

As a result of these discoveries during early investigations, the decision was made to deepen the inspection trench at the right abutment so that any unstable bedrock or highly permeable channel deposits encountered could be treated and/or removed. The deep inspection trench, located between embankment stations 8+50 and 19+00, was designed to penetrate into bedrock, thus removing all pervious and semi-pervious materials from the buried stream channel. The design slopes of the trench were IV on 3H resulting in a maximum trench width of 420 feet, exposing a large surface area of bedrock for inspection. A geologic map and profile of the deep inspection trench is shown on Plate 15.

The deep inspection trench was closely inspected by geotechnical personnel from CESWF and CESWD after the bottom of the trench had reached elevation ± 458 , approximately 19 feet above the design excavation grade. Materials observed in the bottom of the trench consisted of unweathered clay shale of the Upper Britton member of the Eagle Ford Formation, an area of stiff, moist, brown alluvial clay, and a small pocket (less than 10 feet across) of very gravelly clay (described as colluvial material on preconstruction boring logs). The contact between the clay shale and the alluvial clay was

very distinct and vertically oriented, reflecting a buried vertical face in the bedrock which occurs at embankment centerline station 14+30. During the inspection, the decision was made to immediately terminate excavations in the deep inspection trench and start backfilling. The decision was based on the conclusion that the primary materials exposed in the floor of the trench were competent and the colluvial materials comprising the buried stream channel were sufficiently impervious so that stability and leakage through the embankment foundation would not be a problem. The material in the buried stream channel was predominantly clay and gravelly clay which would preclude excess flow beneath the dam. Although some minor faulting was present in the exposed clay shale, the bedrock generally appeared competent and in much better condition than the bedrock encountered by borings in the slump block area downstream of the embankment.

Faults that were examined in the exposed bedrock in the deep inspection trench were classified as normal faults of low displacement, generally a few feet or less. The most prominent fault crossed the embankment centerline at station 13+60 striking generally northwest, paralleling the edge of the buried stream channel. The angle of dip of the fault plane varied from 46° to 54° to the southeast and maximum vertical displacement across the fault plane was approximately 1.5 feet. A geologic map and profile of the deep inspection trench is shown on Plate 15.

(2) **Spillway.** The 50-foot wide spillway structure is perched in the embankment at station 100+00 on the gently sloping left abutment. The excavation for the spillway stilling basin is located at the downstream toe of the embankment. The spillway crest is founded on embankment fill. The remainder of the spillway structure rests on natural overburden and highly weathered to slightly weathered bedrock which supports the spillway stilling basin. The contact between overburden material and bedrock is located at station 11+67 on the spillway centerline. A geologic map and profile of the spillway excavation are presented on Plates 29 and 30, respectively.

Bedrock exposed in the stilling basin excavation belongs to the Upper Britton member of the Eagle Ford Formation. As predicted, some minor bedrock jointing and faulting were observed in the exposed foundation. The structural deformities in the bedrock beneath the spillway structure were predominantly classified as joints, rather than faults, because of the lack of notable displacement across the breaks. The angle of dip measured along the joints ranged from 70° to 90° (vertical). Strike of the joints was variable with an east-west direction being the dominant general trend. Jointing was more abundant within the highly weathered bedrock zones.

The bedrock strata beneath the spillway structure dips gently toward the southeast. Since there were no prominent geologic contacts, marker beds, or bentonite layers passing through the

excavation, bedding dip was most readily measured on bedding planes between the individual clay shale layers.

e. **Bedrock Weathering.** Bedrock in various stages of weathering was encountered immediately underlying the overburden in the deep inspection trench and in the excavations for the spillway and drop structure, and the embankment inspection trench between embankment stations 65+27 and 71+00. The characteristics of the intervals of weathering can be summarized in two categories:

(1) **Highly weathered to altered.** The upper zone of bedrock weathering consists of a 3- to 10-foot thick interval of residual shaley clay and clay shale weathered to a clay consistency. This zone is highly jointed, plastic, and usually moist to wet, depending on the moisture content of the overlying overburden materials. Colors of this zone are various shades of tan, brown, and gray. Where sand and/or gravel is absent, the contact between clay overburden and weathered shale can be difficult to identify.

(2) **Slightly to moderately weathered.** The lower zone of weathering consists of a 5- to 20-foot thick interval of soft, tan-to-gray clay shale characterized by numerous low to high angle joints and fractures which exhibit a blocky structure. The clay shale readily breaks along the joints and fractures, but individual pieces reflect a definite shale bedding structure. Color and strength alteration is limited to zones or "halos" along the joints and fractures caused by leaching and oxidation. The boundary between

the slightly weathered zone, the highly weathered zone, and the unweathered strata below is transitional in all cases.

f. Ground Water. Ground water is found in the semi-impervious clayey sand and gravel deposits immediately overlying bedrock throughout the valley section of the embankment. The ground water is encountered at depths of about 40 feet below the original ground surface, and the piezometric surface rises to about 20 feet below the surface. Free water was also encountered in borings in the pervious sandy strata of the Quaternary terrace deposits along the left abutment of the dam. Static water levels in this area were approximately 15 feet below the surface. A minor amount of free water was trapped in open joints and fractures in the Eagle Ford Formation; however, for the most part, the formation can be considered impervious with negligible ground-water flows. The excavations for the deep inspection trench, the spillway stilling basin, and the drop structure were entirely free of ground-water flows. No formation dewatering was required in any of the construction excavations.

3. Engineering Characteristics of the Overburden and Primary Materials. Engineering characteristics of the materials comprising the foundation for the Joe Pool embankment and spillway were determined by laboratory tests conducted on samples of the materials. Summaries of all laboratory test data are shown in the following publications produced by CESWF: **Design Memorandum No. 24 - Outlet**

Works. Supplement No. 1, Initial Embankment. February 1979. (Plates 16 through 60). Design Memorandum No. 9 - Embankment and Spillway. April 1980. (Plates VI-44 through VI-62). The types of laboratory testing performed are discussed in the following paragraphs:

a. Overburden. Classification tests, Q, R, and direct shear strength tests, and consolidation tests were performed on Denison barrel samples taken at varying depths. Classification and index tests were performed on jar samples taken from auger borings and Denison barrel samples. Based on field investigations, laboratory testing, and engineering judgement, the following properties were used describing overburden material units in descending order:

(1) General overburden found on both abutments and in upper zone of floodplain overburden unit:

moisture content 21 percent
dry density 107 pcf

<u>Type Strength</u>	<u>c tsf</u>	<u>0 Degrees</u>
Q	1.0	1.0
R	0.3	13.0
S	0	20.0

(2) Weaker unit located just above the sand and gravel zone at the base of the overburden beneath most of the floodplain embankment:

moisture content 28 percent
dry density 97 pcf

<u>Type Strength</u>	<u>c tsf</u>	<u>0 Degrees</u>
Q	0.6	0
R	0.3	13.0
S	0	20.0

(3) Sand and gravel unit located at the base of the overburden beneath most of the floodplain embankment:

<u>Type</u> <u>Strength</u>	<u>c</u> <u>tsf</u>	<u>0</u> <u>Degrees</u>
S	0	30.0

b. Primary Materials. Primary materials tested included weathered and unweathered Eagle Ford shale and bentonite. Unconfined compression, Q triaxial compression, direct shear and presplit (residual) direct shear tests were performed on samples of both weathered and unweathered shale. The following properties were used for the primary materials as the design parameters:

<u>Type</u> <u>Material</u>	<u>Strength</u>	<u>c</u> <u>tsf</u>	<u>0</u> <u>Degrees</u>
Shale	S	0.5	18
Bentonite	S	0	18

IV EXCAVATION PROCEDURES

1. Inspection Trench. For the purpose of describing the excavation procedures the inspection trench is divided into three areas: (a) deep inspection trench; (b) old river channel clean out; and (c) shallow inspection trench.

a. The right abutment deep inspection trench (Figures 5 and 6) discussed earlier in this report was excavated between embankment centerline stations 8+50 and 19+00. The maximum width of the top of the trench at natural ground was 424 feet measured at station 15+00. The sides of the excavation sloped downward at a IV on 3H slope to the trench floor whose maximum width was 117 feet at station 15+00. Maximum depth of the trench was 44 feet at station 14+50. A geologic map and profile of the deep inspection trench is shown on Plate 15.

As shown on the geologic map, the trench was excavated in overburden, weathered clay shale, and unweathered clay shale, in descending order. Overburden materials in the deep inspection trench included sandy clays, clayey sands, gravels, and colluvial deposits consisting of reworked shale and limestone fragments in varying mixtures as previously described. Overburden materials were excavated and removed using Caterpillar scrapers pushed by Caterpillar D-6 and D-8 bulldozers. As the bottom of the trench descended, the IV on 3H overburden slopes were shaved and finished using motor graders. Suitable overburden materials removed from the



Figure 5. Right abutment deep inspection trench after completion of bulk excavation and prior to start of final surface cleaning and backfill. Photo taken at embankment station 8+00, looking west.



Figure 6. Right abutment deep inspection trench after completion of bulk excavation and prior to start of final surface cleaning and backfill. Photo taken at embankment station 18+00, looking east.

deep inspection trench were used as random and semicompacted fill in the embankment.

Primary material excavated from the deep inspection trench included weathered and unweathered clay shale of the Eagle Ford Formation, Upper Britton Unit (Figures 7 through 12). The weathered clay shale was excavated using methods similar to those used to excavate overburden. Excavation of the soft to moderately hard unweathered clay shale was accomplished using Caterpillar D-8 bulldozers equipped with ripper teeth. The broken material was then removed by Caterpillar scrapers. Excavation slopes in the clay shale were cut and shaved to final grade using bulldozers and motor graders. Where the slopes were smooth and even, motor graders cleaned the surface sufficiently for mapping, foundation approval, and backfill. In areas where the surface was uneven due to broken rock or ledges, cleaning by hand to remove loose material was required. A total of 161,140 yd³ of material was excavated from the deep inspection trench. Most of the material was suitable for use as fill in the embankment.

Ground water was not encountered in the deep inspection trench excavation, therefore, no dewatering provisions were required. The time period during which the trench was at its deepest - July thru October 1982 - was a relatively dry period with no significant rainfall events. All impervious backfill was placed on surfaces free of water.

As discussed earlier in Section III-2d, excavation in the deep inspection trench was terminated prior to reaching the design grade. Upon notification of this decision the Contractor immediately began operations for final shaving and cleaning of the excavation slopes in preparation for backfill with impervious clay. A record of approval of the exposed clay shale surfaces in the deep inspection trench is provided on Plate 34.

b. The former stream channel of Mountain Creek intersects the upstream toe of the embankment at station 60+50. The former channel then curves eastward and continues directly under the embankment centerline from station 57+00 to station 52+50 before curving northward and intersecting the downstream embankment toe at station 51+00. Borings indicated extensive concentrations of typical river channel deposits, including sandy, gravelly pockets and organic deposits, all of which were determined to be unsuitable as embankment foundation. The bulk of the unsuitable material was removed using Caterpillar scrapers pushed by Caterpillar D-6 and D-8 bulldozers. More saturated areas where equipment maneuverability was limited were excavated using a Caterpillar B200 track-mounted backhoe. The excavation to clean out the creek channel reached a maximum depth of about 20 feet, and a maximum width of approximately 200 feet. A map of the portion of the excavation occurring beneath the embankment is presented on Plate 18. All of the material removed from this excavation was classified as overburden material; bedrock was not

encountered.

Minor ground-water flows were encountered in some of the areas of this excavation where sand and/or gravel were present. Most of the flows were isolated, and eventually dried up after they drained. Two small areas, shown on Plate 18, as A and B, continued to produce minor flow until they were covered with fill. Area B was classified as a seep, merely causing the area to remain wet, but requiring no remedial measures. In Area A, where water exited along and at the base of a slope at a rate estimated at 5 gpm, actions were taken to cut off the flow prior to placement of backfill. A 2-foot wide by \pm 8-foot deep ditch was cut along the top of the slope intersecting the ground-water flow. The ditch was pumped dry and immediately backfilled with impervious clay, cutting off the flow to the slope. The wet material on the slope was then removed and the area was plated and sealed with impervious clay.

c. The shallow inspection trench at the embankment centerline was excavated to a minimum depth of 5 feet below the stripped surface. Bottom width of the trench was 12 feet with IV on 1H sideslopes. The trench was excavated in intervals up to 2,000 linear feet. Excavation of the shallow inspection trench was accomplished with Caterpillar scrapers pushed by Caterpillar D-6 and D-8 bulldozers. When the trench reached the approximate required depth, the sides were cut and shaved to a IV on 1H slope using motorgraders. The scrapers were then used again to complete

excavation and removal of loose material from the bottom of the trench. The shallow inspection trench was excavated almost exclusively in overburden materials. The only exception occurred between embankment stations 65+27 and 71+00 where weathered primary material was encountered. Ground water was not encountered in the shallow inspection trench. Geologic maps and profiles along the embankment inspection trench are presented on Plates 14 through 26.

2. Spillway. The excavation for the spillway chute and stilling basin was located at the downstream toe of the embankment at station 100+00. The materials encountered in the excavation were described in detail in Section III of this report. Generally, the materials consisted of overburden, and weathered primary material of the Upper Britton member of the Eagle Ford Formation. The maximum depth of the spillway excavation was approximately 30 feet as measured from the stilling basin floor to natural ground. A geologic map of the spillway excavation is presented on Plate 29.

Overburden and highly weathered primary materials were excavated using Caterpillar scrapers pushed by Caterpillar D-6 and D-8 bulldozers. The excavation slopes were smoothed and shaved to IV on 3H using bulldozers and motorgraders. Slightly weathered primary materials in the lower part of the excavation were excavated by first breaking and loosening the material with a Caterpillar D-8 bulldozer equipped with ripper teeth, and then removing with scrapers. A minimum of 2 feet of undisturbed material was left above grade for

protection from damage and weathering until excavation to final grade.

Excavation to final grade around the spillway structure was accomplished with various applicable excavation equipment. The evenly sloping surfaces and flat surfaces located beneath the spillway chute and stilling basin, respectively, were excavated to grade using a Caterpillar D-6 bulldozer, a John Deere 350C bulldozer, and a truck-mounted backhoe with a telescoping bucket. Loose material was removed from the excavation using a rubber-tired front-end loader. Trenches crossing the spillway floor for the spillway drainage system were excavated using the truck-mounted backhoe, as were the footings for the spillway training walls. The spillway end sill and keys were excavated using a Case tractor-mounted backhoe. Materials adjacent to the spillway walls were excavated using the truck-mounted backhoe with telescoping bucket and the 350C bulldozer. Final cleaning of all surfaces was done by hand using compressed air and shovels. Suitable materials removed from the spillway excavation were used as random and semicompacted fill in the embankment. Ground water was not encountered in the spillway excavation.

3. **Foundation Protection.** As a measure of foundation protection in the deep inspection trench and spillway, a minimum of 2 feet of undisturbed material was left in-place in areas where shale or clay shale were to be exposed at final grade. The final 2 feet was then

excavated in a continuous operation within a 2-hour period. This time limitation resulted in decreased exposure time for the surface and smaller areas being exposed at one time. The reason for this requirement was that laboratory testing and observation of the shale and clay shale materials revealed the tendency of the material to lose moisture upon exposure to air, resulting in cracking, slaking, and progressive deterioration of the material within hours of initial exposure. Additional requirements designed to limit time of exposure included requiring the first lift of fill material to be placed and compacted/sealed off within 8 hours of when excavation into the final 2 feet began or within 2 hours after achieving final grade, whichever required placement sooner.

Pneumatically placed concrete was used to seal the excavated surface on the nearly vertical walls of the spillway end sill. However, as shown in Figure 50, the first application of pneumatic concrete was unsuccessful. The concrete slumped away from the wall leaving void space and resulting in deterioration of the shale face. The contractor was required to remove the pneumatic concrete where it had slumped, achieve a fresh, undeteriorated shale surface, and reseal with pneumatic concrete. The second application was successful in protecting the shale face.

4. **Foundation Preparation.** The primary requirement for the final preparation of rock foundation surfaces prior to backfill was a thorough cleaning, which included the removal of all loose, drummy,

or deteriorated material using a combination of shovels, brooms, and blown compressed air. Backfill commenced immediately after final cleanup and approval. The strictly enforced time limitations, described above, eliminated any requirement for treatment of the exposed rock surfaces using moisture sealant spray.

There was no requirement to clean overburden surfaces by hand. Surfaces were shaved and finished with heavy equipment including scrapers and motor graders. Subsequent to inspection and approval, and prior to placement of fill, the overburden surfaces were scarified using a disc plow. Each layer of compacted impervious fill placed in the spillway and inspection trench excavations was benched in to the cut-slope on a per lift basis so that proper compaction could be performed to achieve a seal. A typical contact zone between the overburden and fill is exhibited on Figure 29.

V FOUNDATION ANCHORS

1. General. Permanent foundation anchors were installed in the spillway chute and stilling basin foundation and the drop structure foundation. A total of 214 foundation anchors were installed in the spillway and 20 in the drop structure foundation. Each was designed to extend a minimum of 15 feet into the clay shale beneath the floors of the spillway and drop structure. Plate 31 shows a plan view of the spacing of the anchors and a cross-section depicting the angle and depth of the anchors in the spillway.

2. Equipment. The 6-inch diameter holes for the foundation anchors were drilled using a Gardner-Denver track-mounted pneumatic drill. The anchors consisted of No. 11 rebar with a 90° bend in the top 4.67 feet and equipped with vertical bar spacers wire-fastened to the anchor for centering in the hole. A one-half inch diameter steel grout pipe designed to extend from the surface to the bottom of the anchor was permanently fixed to each anchor. The grout placed from the bottom of the hole up was delivered from an off-site source in ready-mix trucks. The following mix design was used for each truckload of grout delivered to the site:

2,600 lb SSD sand
540 lb Portland cement
45 gal water

3. Procedures. Drilling and installation of the foundation anchors occurred in the drop structure during the period February-March 1983, and in the spillway April-May 1983. All of the anchors in the chute

section of the spillway were installed at an angle of 59° from horizontal; anchors in the horizontal sections of the spillway and drop structure were set at a vertical angle. Six-inch diameter holes for the anchors in the spillway were drilled through the 4-inch protective concrete slab and 12-inch sand filter blanket to a total depth of 15 feet into the Eagle Ford Shale using the pneumatic drill. Holes in the drop structure penetrated the protective slab directly into the shale - no filter was present. In the spillway, collars were fitted into the drill holes to prevent caving and loss of the sand filter. Upon completion of drilling, the holes were cleaned with air and sealed with wooden plugs. Later the holes were recleaned and the anchor bars, equipped with centralizers, were set in the holes and supported at the correct depth using wooden blocks. All holes were maintained free of water until grouting commenced. The normal procedure was to drill and plug a number of holes, insert the anchor bars, and place grout all in the same day. After the anchors were fixed in the holes at the correct elevation, the grout mixture was pumped through the one-half inch steel grout pipe until grout returned to the surface, indicating the hole was filled.

4. Pull-Out Tests. Prior to installation of foundation anchors in the spillway and drop structure, pull-out tests were conducted to verify the capabilities of the anchors and the foundation bedrock to withstand maximum design loads. A test was conducted on 17 January 1983, on an anchor bar in the base of the drop structure, 12 feet

left of centerline at station 8+06.5. In the spillway, a test was conducted on 15 April 1983, on an anchor bar installed 20 feet left of centerline at station 11+70 (Figure 56). The anchors were stressed to a maximum of 45 tons. Results of the tests confirmed the adequacy of the anchor lengths and hole depths specified. A detailed evaluation of the pull-out tests will be presented in the Embankment Criteria Assessment Report. Data collected during the tests are included in Appendix I.

VI CHARACTER OF THE FOUNDATION

1. **General.** Clay shale belonging to the Upper Britton Member of the Eagle Ford Formation, Upper Cretaceous age, comprise the rock foundations supporting the spillway structure located at embankment station 100+00, as well as the drop structure situated adjacent to the spillway discharge channel, and the main embankment in the vicinity of the right (east) abutment deep inspection trench. Overburden consisting of heterogeneous mixtures of silt, clay, sand, and gravel mantle the bedrock in thicknesses up to 55 feet. Geologic maps of the materials exposed in excavations for the spillway and the embankment inspection trench are presented in this report. Engineering characteristics of the overburden and primary materials were presented in Section III of this report.

2. **Character of Primary Materials.** Primary materials observed in excavations for the spillway, drop structure, and main embankment inspection trench consisted of slightly to highly weathered clay shale. The clay shale is generally soft to moderately hard, gray to dark gray, medium-to thin-bedded, and contains scattered pockets of fossil shells (Ammonite fragments) which are only occasionally well preserved and intact. Thin, soft to moderately hard bentonitic shale seams occur throughout the exposed sequence. Minor faulting and associated jointing and fracturing were noted in the exposed clay shale surfaces. All observed faults were normal faults, usually of

high angle and low displacement, with less than 1-foot thick brecciated zones adjacent to the fault planes. No striations were observed on the fault planes due to the softness of the rock. Joints were generally tight, occasionally calcium filled, and tended to dissipate vertically. Soon after exposure, the bedrock began to show signs of deterioration such as lightened color, hair-line cracks, and minor slaking, all due to loss of moisture. The degree of weathering of the bedrock varied from slightly weathered, where bedrock jointing had allowed penetration of iron-rich ground water resulting in orange-colored streaks described as "weathering halos" within the gray to dark gray clay shale, to highly weathered in the upper zones where exposure to ground-water leaching had literally altered the bedrock to a soft, brown to yellow clay consistency. Bedding within the clay shale suggested a slight incline toward the southeast, with occasional locally abrupt dips or flexures occurring near fault zones. Bedding thicknesses varied from a few inches to a few feet, with the individual beds separated by very thin bedding planes consisting of slightly softer, dark gray, bentonitic clay shale seams. Excavations near the bottom of the right abutment deep inspection trench encountered isolated pockets of trapped ground water which had probably percolated down through bedrock joints or faults. No actual flow was observed and the zones quickly dried up after exposure.

3. Character of Overburden Materials. Overburden materials

encountered in excavations during construction of Joe Pool Lake are described in detail in Section III of this report. The overburden consisted predominantly of clay near the surface, grading downward into sandy clay with increasing amounts of sand and gravel near the base of the overburden. Near-surface clays, as observed in the 5-foot deep inspection trench along the embankment centerline, are medium stiff to hard, silty, varying in plasticity as a function of sand content, and varying in colors as a function of the content of organic matter and minerals, specifically iron and calcium. Basal overburden exposed in excavations for the spillway, drop structure, and right abutment deep inspection trench were described as sandy to very sandy clay, occasionally very gravelly, with local areas of clayey, sandy gravel and clayey sand. Pure, clean sand or gravel was not encountered.

Minor ground-water flow from overburden materials was observed in the river channel section of the main embankment, between stations 52+00 and 57+00. No other areas of the exposed overburden produced sustained flows of ground water.

VII FOUNDATION INSTRUMENTATION

1. General. Instrumentation for the project consists of 18 piezometers, 3 settlement plates, 3 deep settlement plates, outlet works reference pins, and spillway reference marks. Embankment and spillway plans of instrumentation are shown on Plate 33.

2. Piezometers.

a. General. Piezometers for the project were installed during both the initial and completion contracts. During the initial contract, six piezometers (P-1 through P-6) were installed. Twelve piezometers (P-7 through P-10 and P-12 through P-19) were installed during the completion contract. It was determined that P-11 would serve no useful purpose and was never installed. The piezometers installed were the porous plastic tip open tube type as manufactured by Slope Indicator Company, Seattle, Washington, with 3/8-inch diameter PVC risers.

b. Embankment Station 16+00. Piezometer P-10 is founded in a sandy clayey gravel in the overburden beneath the embankment. Piezometer P-12 is founded in the unweathered clay shale beneath the overburden.

c. Embankment Station 38+30, Piezometers P-1 and P-3 are founded in the unweathered Eagle Ford Shale beneath the floodplain section of the embankment. Piezometer P-3 is located in clay shale at the downstream toe. Piezometers P-2, P-4A, and P-13 are founded in sandy strata of the floodplain overburden.

d. Embankment Station 50+00. Piezometers P-14 and P-15 are founded in a sandy clay in the overburden of the closure section of the embankment. Piezometer P-16 is founded in a gravelly clay in the overburden beneath the closure section of the embankment.

e. Embankment Station 63+00. Piezometers P-17, P-18, and P-19, are all founded in the overburden of the Mountain Creek floodplain, just west of the closure section. Piezometer P-17 is founded in clay, P-18 is founded in a clayey gravel, and P-19 is founded in a sandy clay.

f. Embankment Station 99+50. Piezometer P-5 is founded in a sandy layer in overburden and P-6 is founded in the weathered clay shale adjacent to the uncontrolled spillway.

g. Embankment Station 100+50. Piezometers P-7, P-8, and P-9, are located adjacent to the spillway. Piezometer P-7 is founded in the overburden in a sandy layer. Piezometers P-8 and P-9 are founded in the weathered clay shale.

h. Conclusions from Piezometer Observations to Date. The piezometers (P-1, P-2, P-12, and P-15) that have shown an increase of pore pressure, with an increase in fill height, are at the present time showing a dissipation of excess pore pressure. Only one piezometer, P-1, has shown a significant amount of excess pore pressure. Several piezometers (P-3, P-13, P-16, P-18, and P-19) are showing an increase in excess pore pressure. These piezometers are located either upstream or downstream of the embankment. This

delayed increase in excess pore pressure can probably be attributed to time lag in the response of the foundation to the load being applied. The remainder of the piezometers have either shown a small increase in pore pressure since installation (P-10 and P-14) or have not shown any excess pore pressure since installation (P-4A, P-5, P-6, P-7, P-8, P-9, and P-17).

3. Settlement and Deep Settlement Plates.

a. General. Three settlement plates (SP-1, SP-2, and SP-3) and three deep settlement plates (DSP-1, DSP-2, and DSP-3) were installed during the initial contract. Each settlement plate consists of a 3-foot square, one-fourth inch thick steel plate placed on the embankment foundation (top of overburden) with steel riser pipes extending through the fill. Each deep settlement plate consists of a 30-inch diameter, one-fourth inch thick steel plate placed in primary material (clay shale) with the steel riser pipes extending through the fill. The settlement plates are used to monitor the vertical movement of the entire foundation, while the deep settlement plates were used to monitor the vertical movement of the primary (clay shale) material. A plan view of the locations of the settlement plates and deep settlement plates is shown on Plate 33. These vertical movement monitoring devices were installed in essentially two locations - the floodplain and the left embankment (spillway). Results of monitoring will be discussed at each of these general locations.

b. **Floodplain.** Settlement Plate SP-1 (top of overburden) and deep settlement Plate DSP-1 (top of clay shale) are located below the floodplain section of the embankment at station 38+70. The foundation has consolidated a total of 1.7± feet (with 0.9± feet occurring in the overburden and 0.8± feet occurring in the unweathered primary material). The total settlement and rate of settlement achieved are well within limits that could be expected for the materials and loading involved.

c. **Spillway.** Settlement Plate SP-2 (top of overburden) and deep settlement Plate DSP-2 (top of weathered shale) are located on the east (right) side of the spillway at station 99+50. The foundation has consolidated a total of 0.34± feet in this location (0.30± feet occurring in the overburden, and 0.04± feet occurring in the weathered and unweathered clay shale combined).

Settlement Plate SP-3 (top of overburden) and deep settlement Plate DSP-3 (top of unweathered shale) are located on the west (left) side of the spillway. The foundation has consolidated a total of 0.26± feet (0.18± feet occurring in the overburden and weathered primary combined, and 0.08± feet occurring in the unweathered clay shale).

The utilization of preload initial embankment, partial excavation thereof to construct the concrete structure, and then reloading by backfilling each caused vertical movement in the form of consolidation or heave. The amount of consolidation induced due to

backfilling around the concrete structure is very small indicating that the preload initial embankment was very successful in its purpose of eliminating significant differential settlement at the structure.

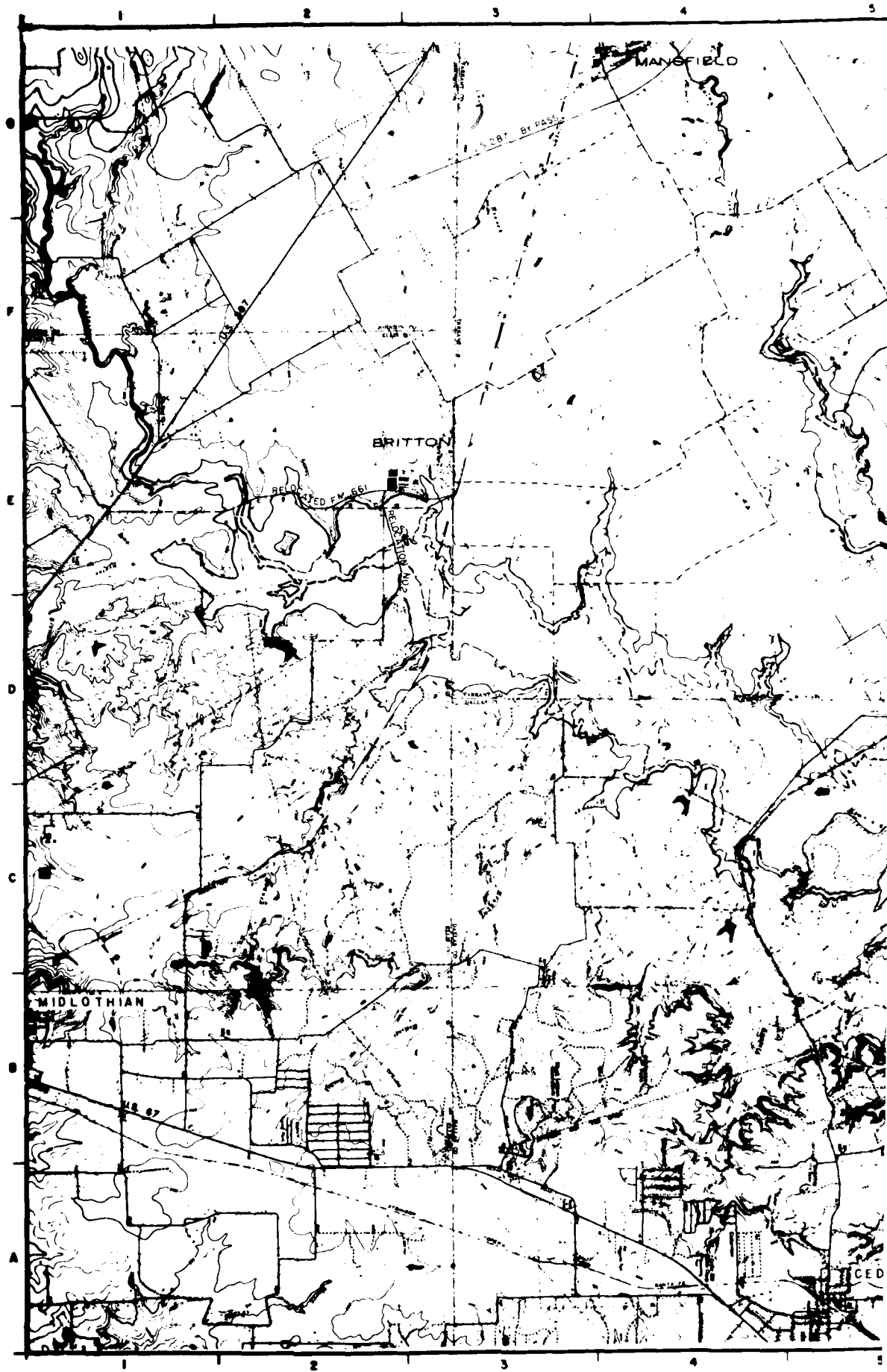
4. Outlet Works Reference Pins. Reference pins were installed along the invert of the conduit from the intake tower to the discharge chute, and also on the stilling basin walls. Reference pins were installed at each end of each conduit monolith, discharge chute slab, immediately downstream from the intake service gates, in the intake tower transition section immediately upstream from the first conduit monolith and on each side of each joint of both walls of the stilling basin. The reference pins consist of bronze bolts imbedded in the concrete. The surveys conducted on the reference pins show that no detectable movement has occurred in the outlet works monoliths to date.

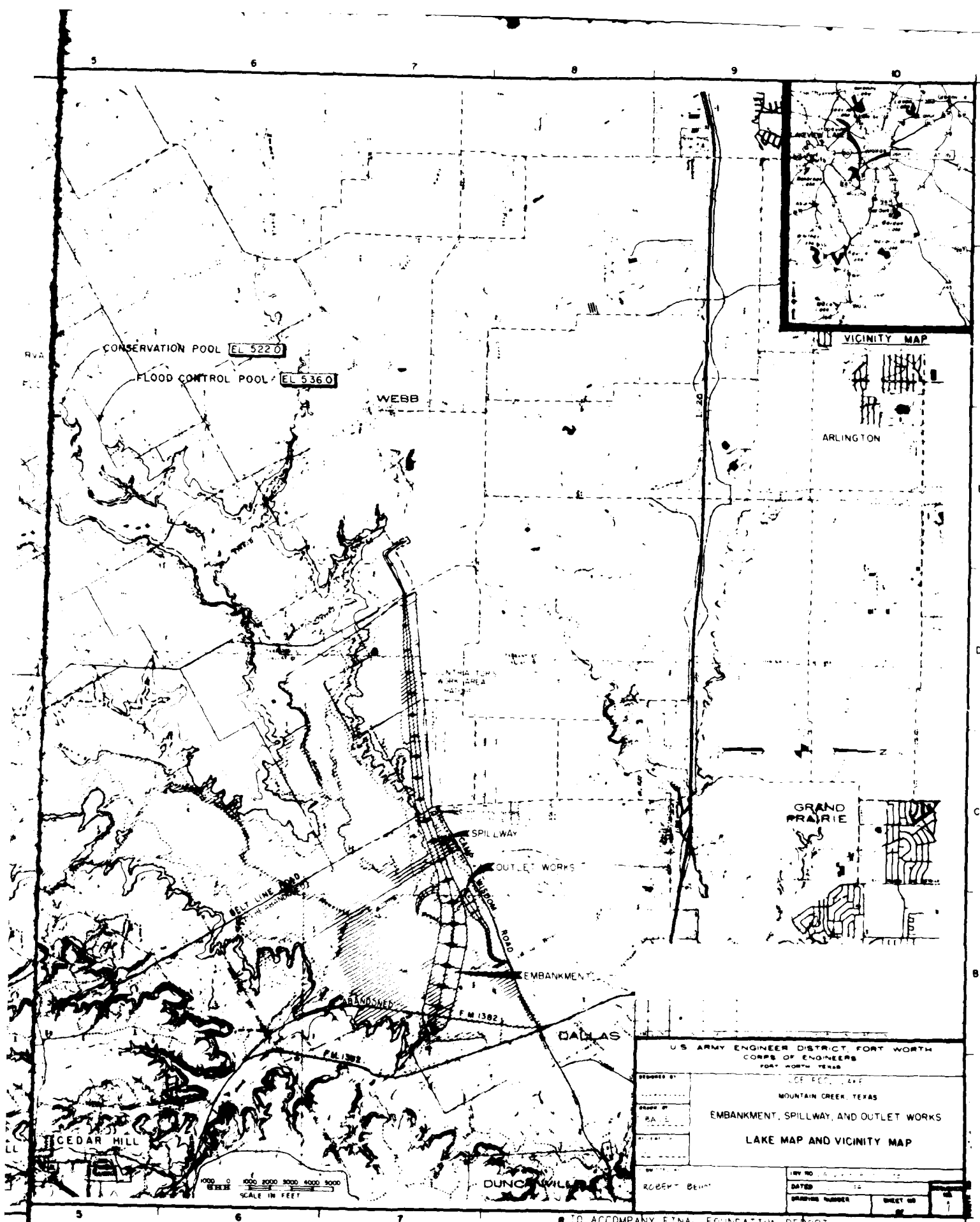
5. Spillway Reference Marks. Reference marks were installed in the concrete of the slabs and walls of the spillway to monitor the movement of the spillway. The reference marks consist of bronze bolts imbedded in the concrete. Initial readings have been made.

6. Evaluation. The above description of foundation instrumentation was extracted from Joe Pool Lake Pre-Inspection Brochure No. 1, dated February 1986. A detailed evaluation of the foundation instrumentation program and its performance will be presented in the **Embankment Criteria Assessment Report.**

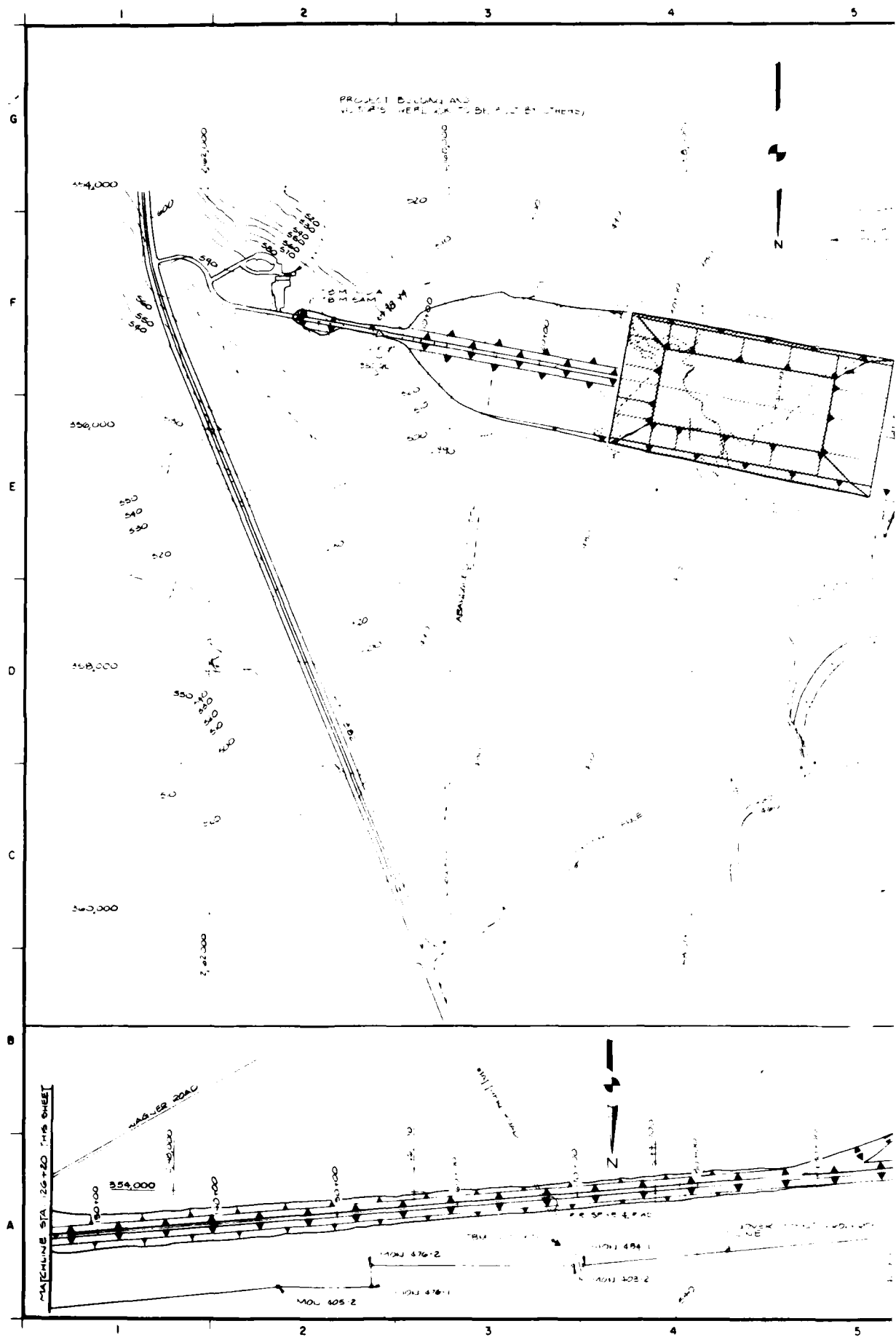
VIII FUTURE CONSIDERATIONS

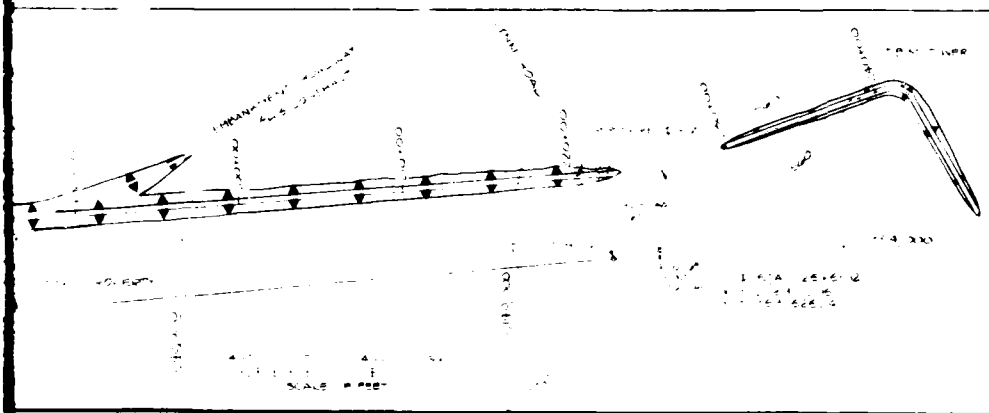
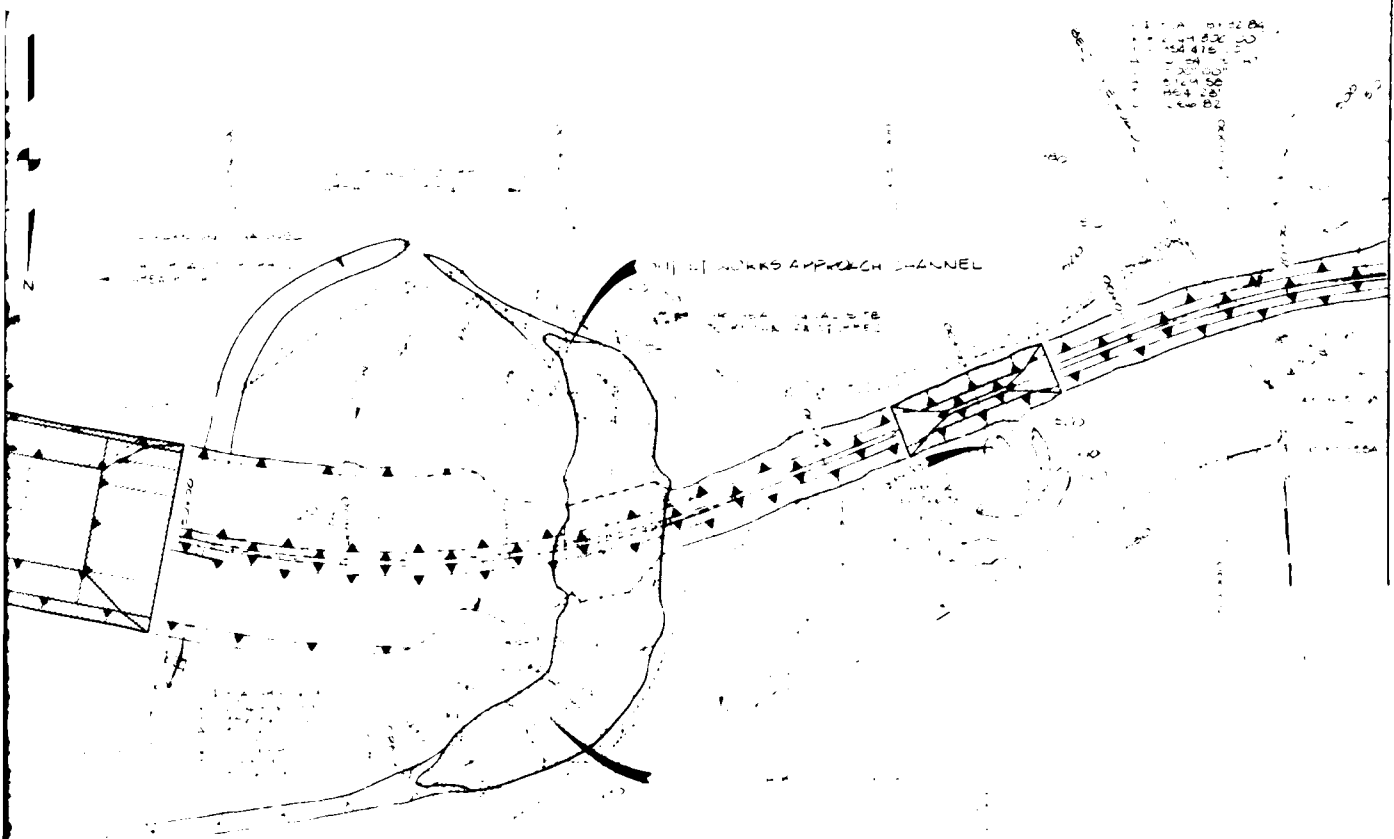
1. Conditions That Could Cause Problems. There were no unanticipated foundation conditions discovered during construction of Joe Pool Dam which would pose a threat to the stability of any of the pertinent features of the project. All bedrock surfaces were found to be competent and stable and remained so until covered by impervious backfill or protective concrete.
2. Recommendations. If pneumatically placed concrete is to be used for foundation protection in the future, consideration should be given to providing some type of support for the concrete when it is applied to vertical or nearly vertical slopes. When applied without support, as was the case in the spillway end sill and key trenches, the concrete tends to slump away from the slope, primarily due to its own weight, leaving a void space between the slope and the pneumatic concrete. Wire support attached to the slope and encased in the concrete would prevent this type of failure.



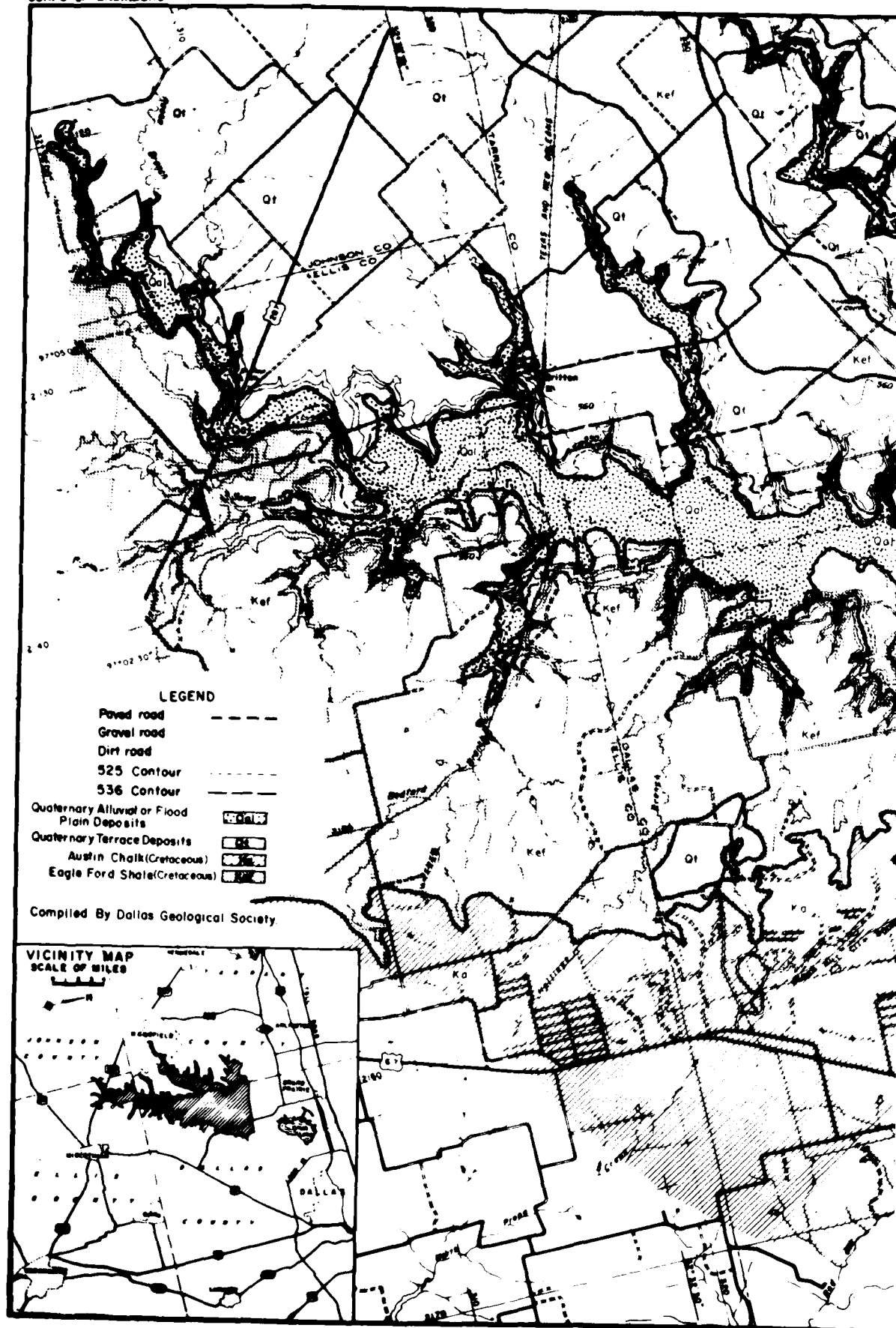


8 TO ACCOMPANY FINAL FOUNDATION REPORT

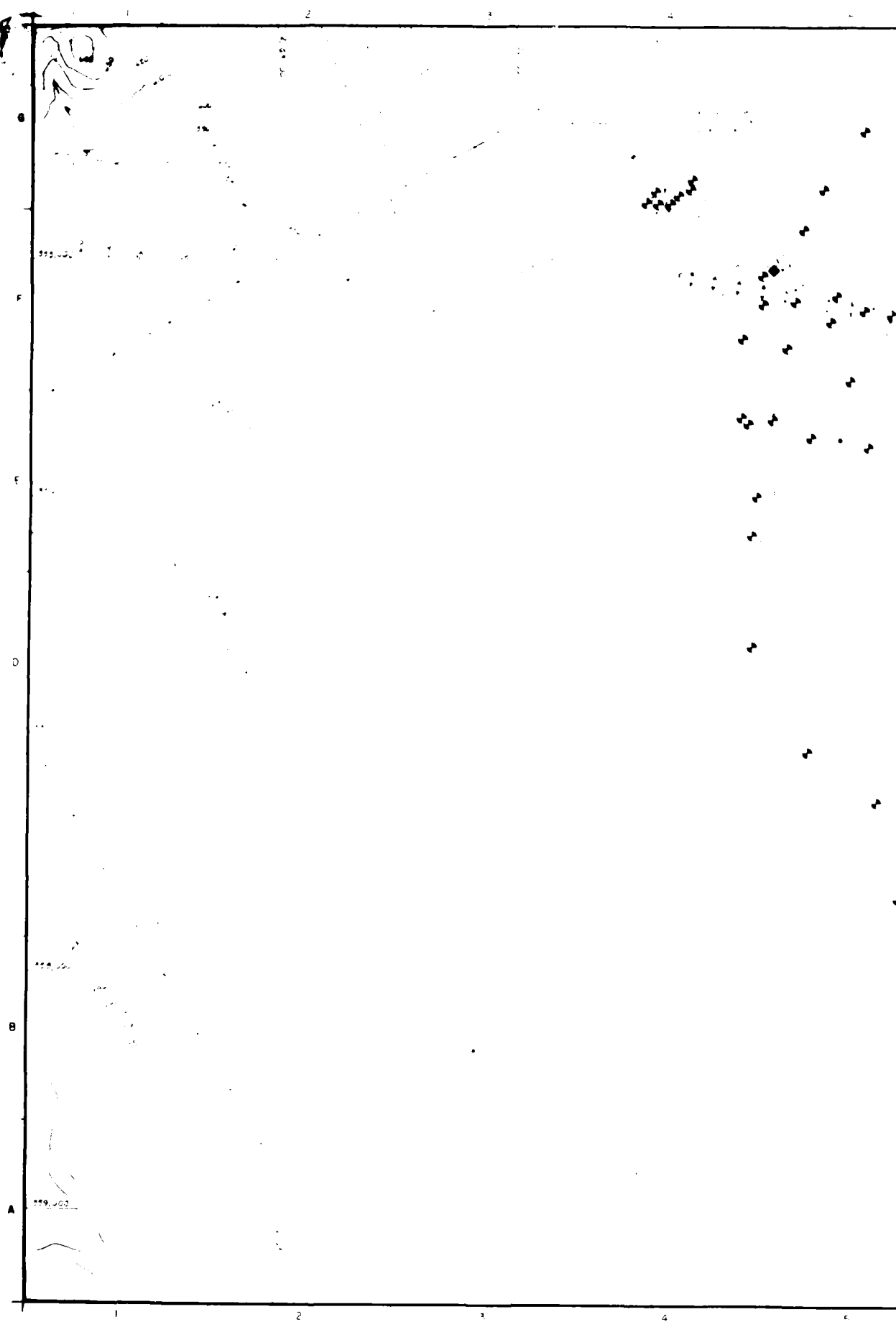


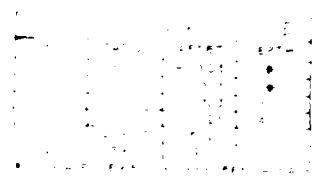
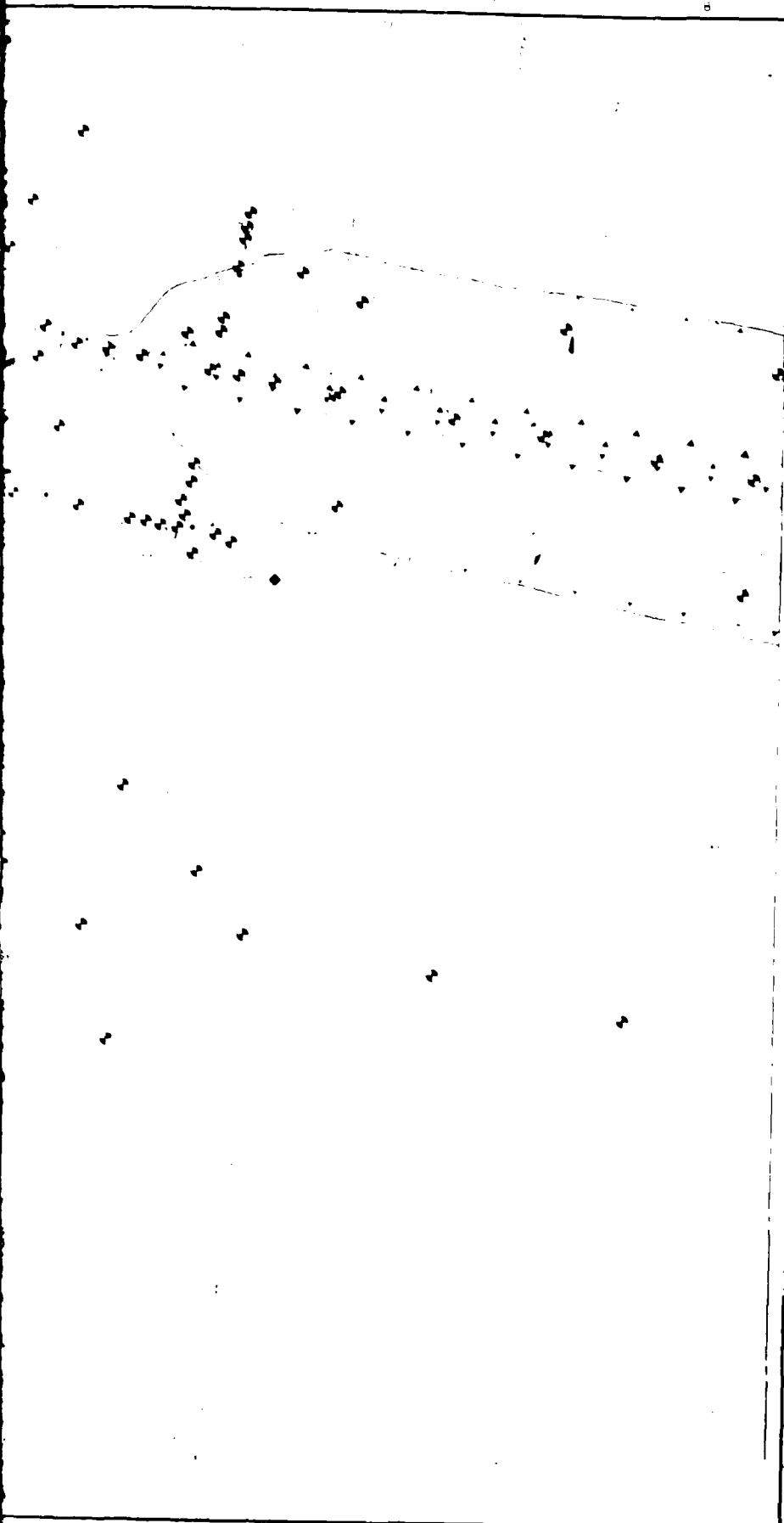


U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: C. H. HARRISON	JOE POOL LAKE W. MOUNTAIN CREEK, TEXAS
DRAWN BY: C. H. HARRISON	EMBAKMENT, SPILLWAY, AND OUTLET WORKS
CHECKED BY: C. H. HARRISON	GENERAL PLAN
APPROVED BY: C. H. HARRISON	HY. NO. DAC-63-8-B-0093
DATED JULY 98	REVISION NO. 2
DRAWING NUMBER	SHEET NO. 2



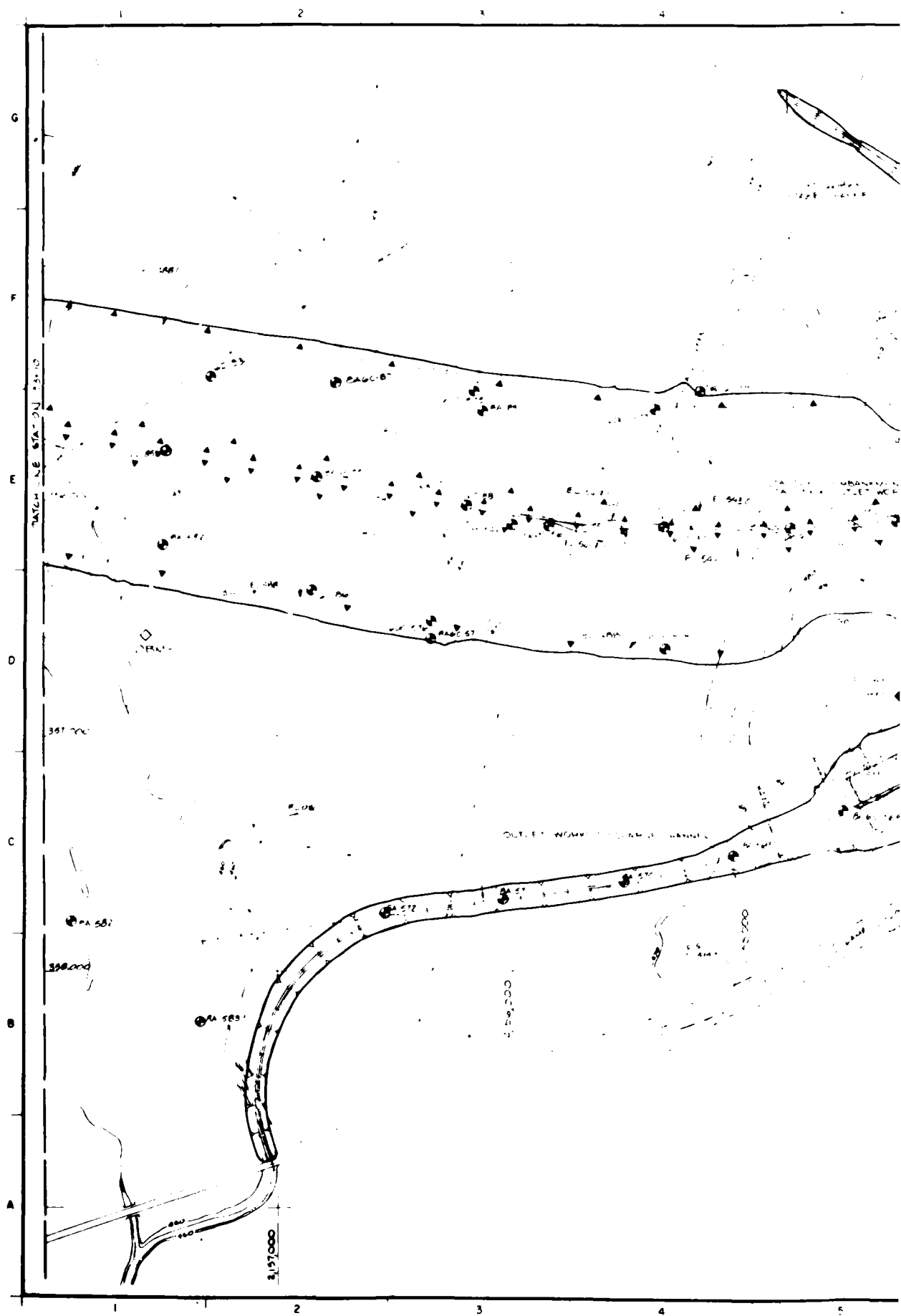
TO ACCOMPANY FINAL CONVENTION REPORTS

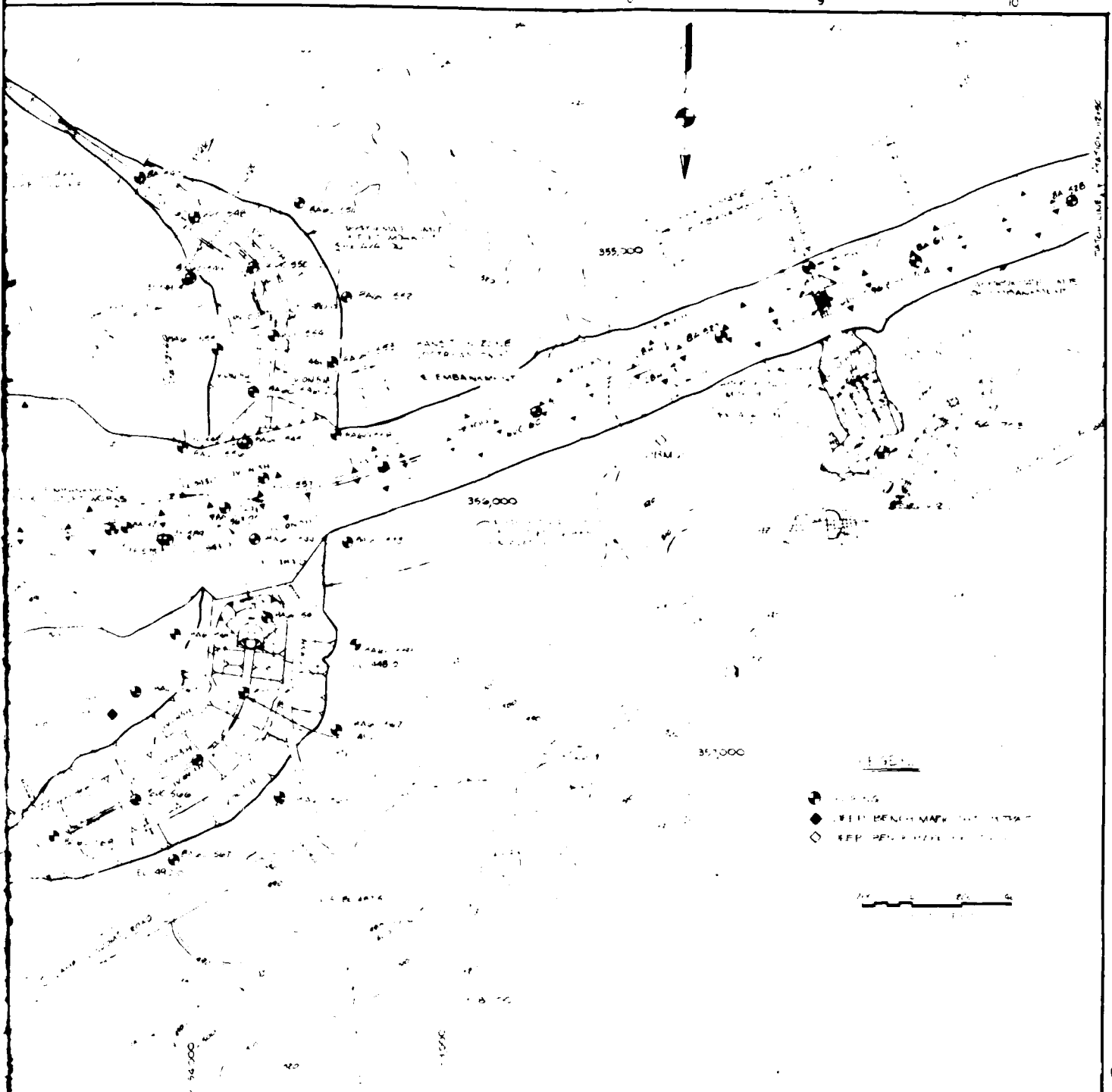




U.S. ARMY ENGINEER DISTRICT, FORT WORTH DISTRICT ENGINEER FORT WORTH, TEXAS	
PROJECT NO. 1001	
SUBJECT: EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
PLAN OF BORINGS I	
STATION 2+60 TO STATION 3+10	
DRAWN BY: JACOB B. B. B. B.	
DATE: JULY 1961	REVISION NO.
DRAWING NUMBER	SHEET NO. 4

8 TO ACCOMPANY FINAL FOUNDATION REPORT





U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
LICE POOL LAKE MOUNTAIN CREEK, TEXAS	
EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
PLAN OF BORINGS II STATION 33+10 TO STATION 112+50	
DESIGNED BY ENGINEER CORPS OF ENGINEERS	DATE JULY 1958
DRAWN BY P. REED ENGINEER	DRAWING NUMBER
CHECKED BY ENGINEER	SHEET NO. 5
APPROVED BY ROBERT REED	

8 TO ACCOMPANY FINAL FOUNDATION REPORT

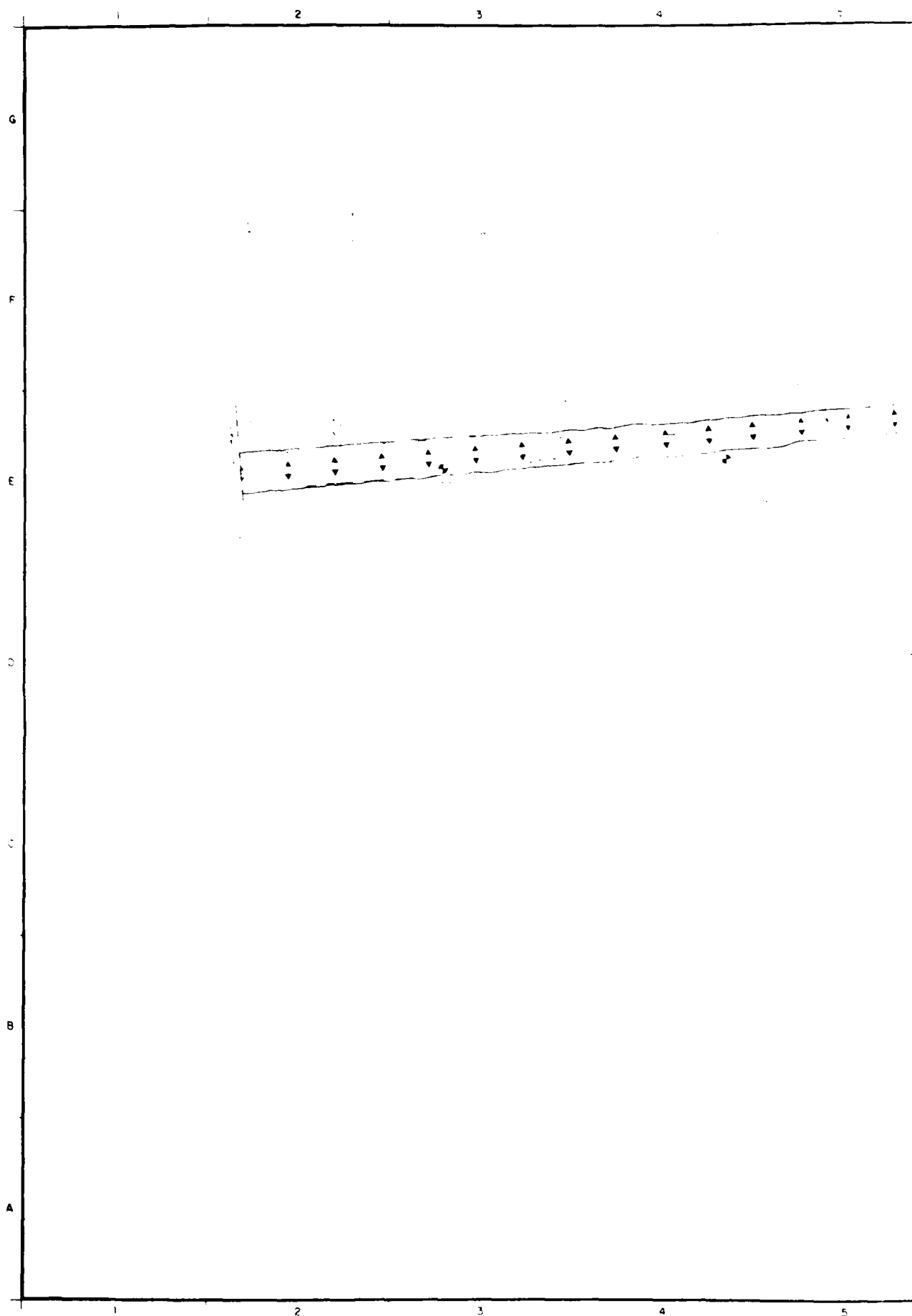


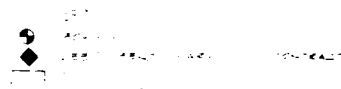
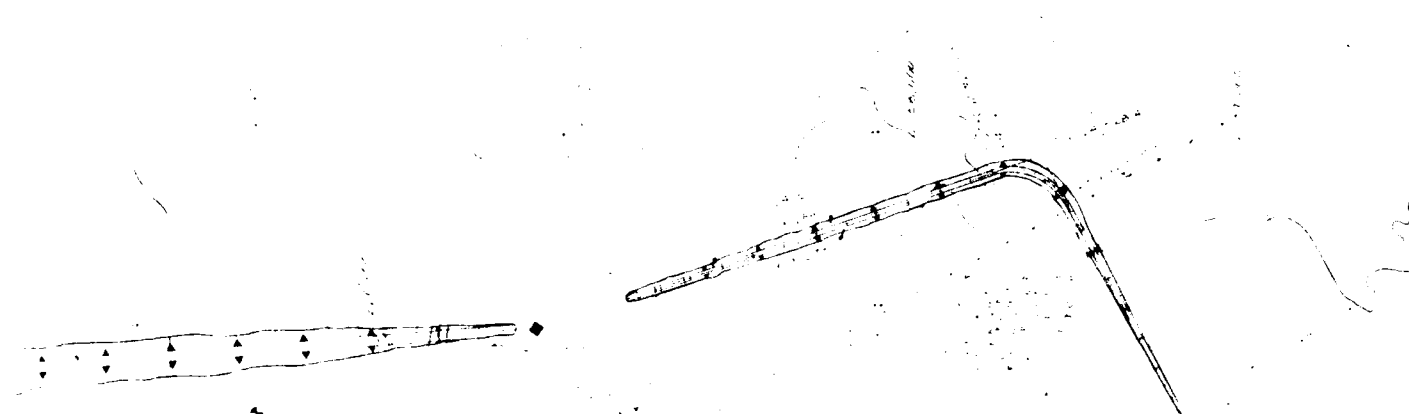
PLAN

1/2" = 100'

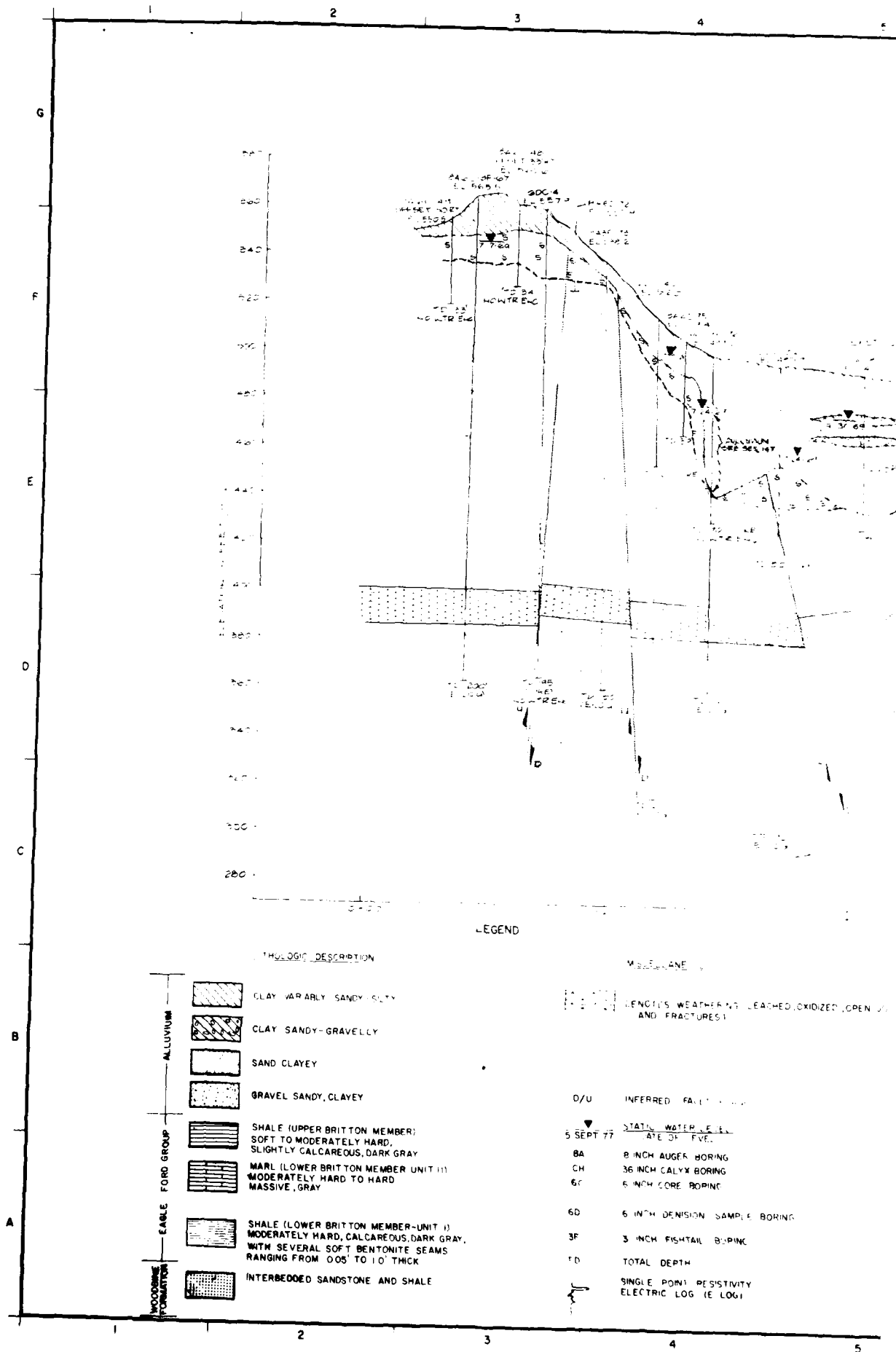
U.S. ARMY ENGINEER DISTRICT FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
PROJECT: EMBANKMENT, SPILLWAY, AND OUTLET WORKS			
PLAN OF BORINGS III STA. 2+50 TO 2+86+00			
DESIGNED BY V. J. HARRIS	CHECKED BY V. J. HARRIS		
DRAWN BY V. J. HARRIS	DATE: JULY 1961		
SCALE: 1" = 100'	DRAWING NUMBER	SHEET NO.	SEQUENCE NO.
		6	6

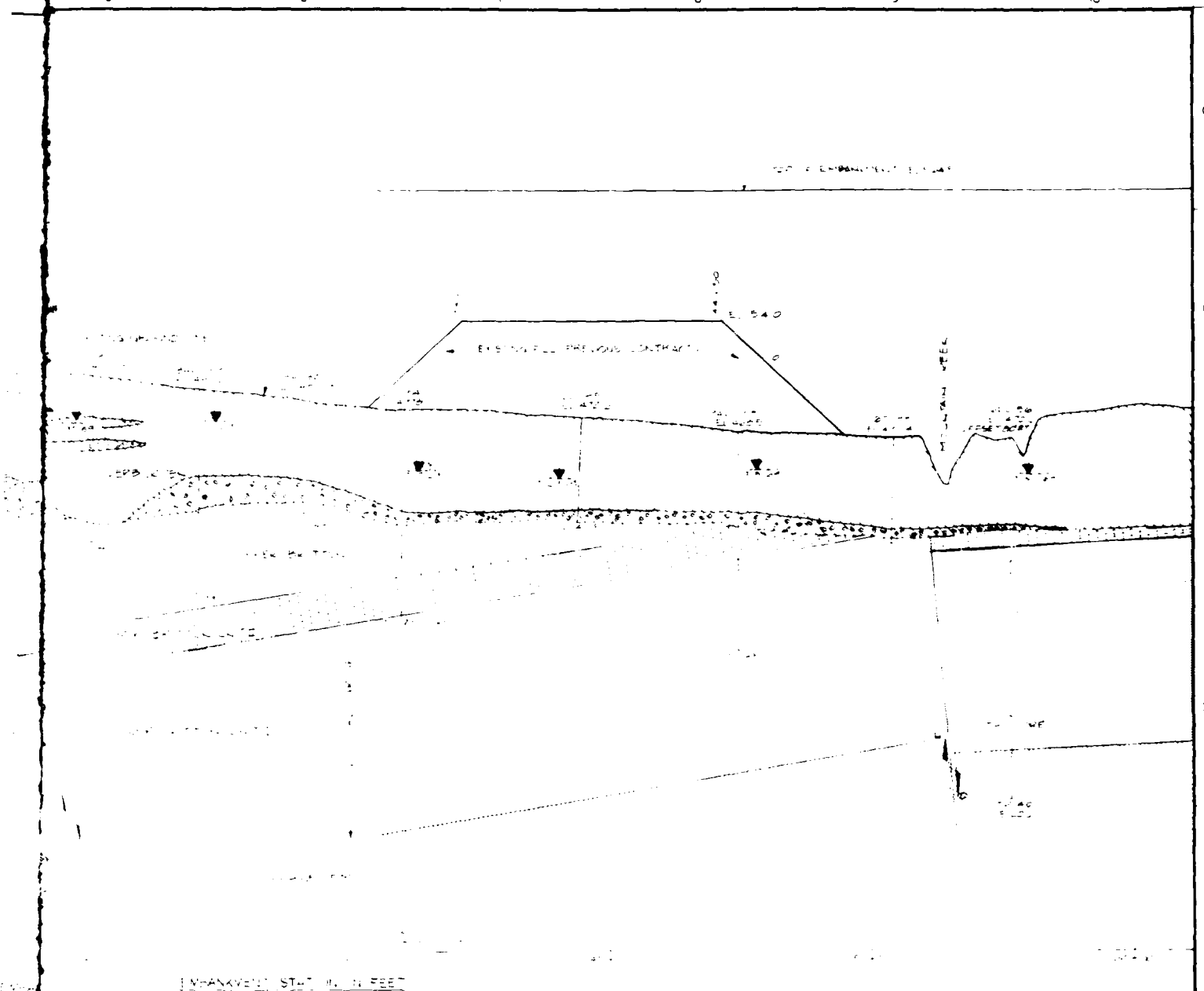
8 TO ACCOMPANY FINAL FOUNDATION REPORT





U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY	W. E. FLOOD, LAY		
CHECKED BY	W. E. FLOOD, LAY		
DATE	JULY 1951		
PROJECT	EMBANKMENT, SPILLWAY, AND OUTLET WORKS		
NO.	PLAN OF BORINGS IV		
PROJECT NAME	STATION 186+00 TO 249+60		
DATE	JULY 1951	SHEET NO.	7
DRAWING NUMBER	SEQUENCE NO.		





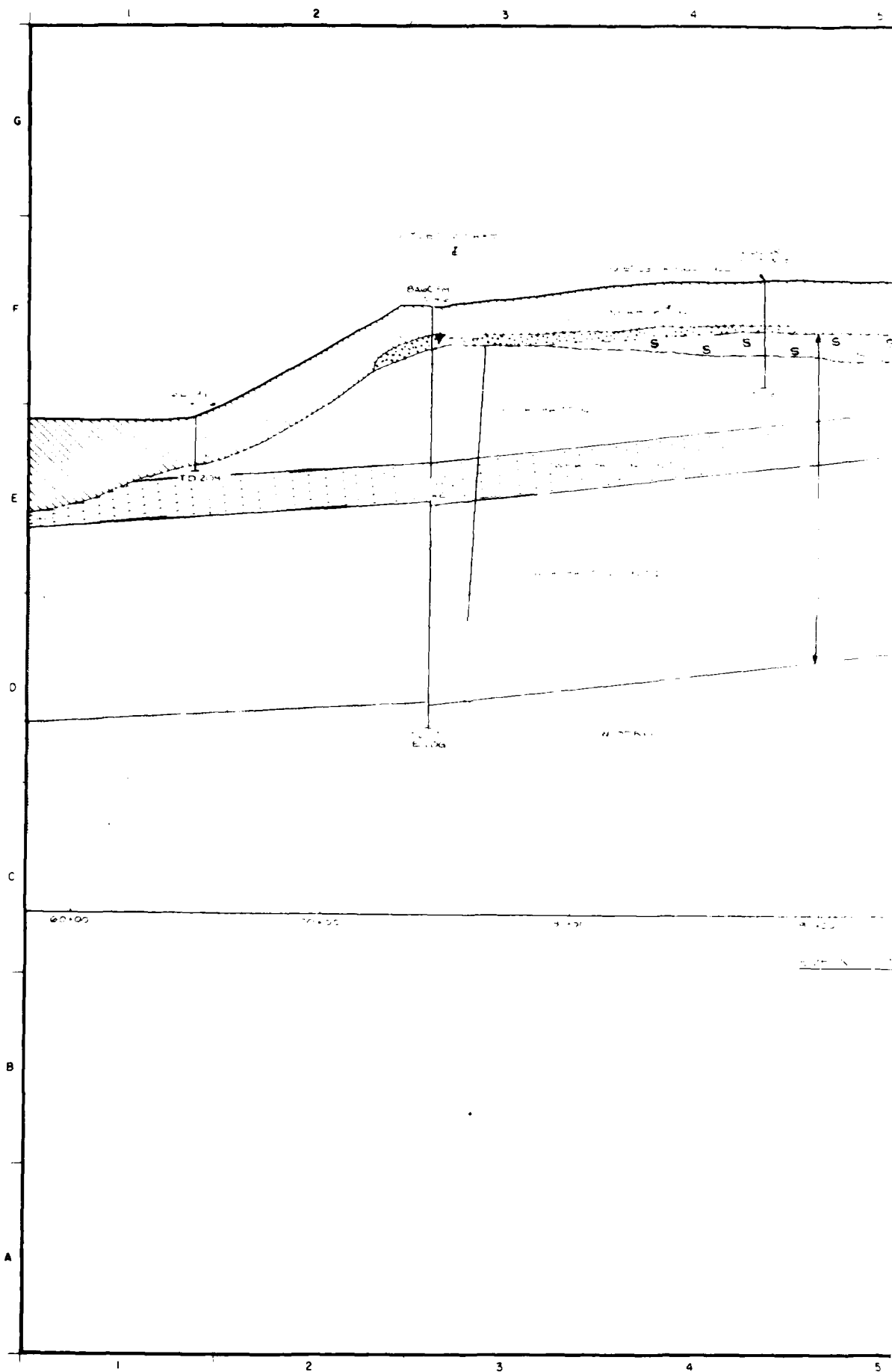
EMBANKMENT STATION IN FEET

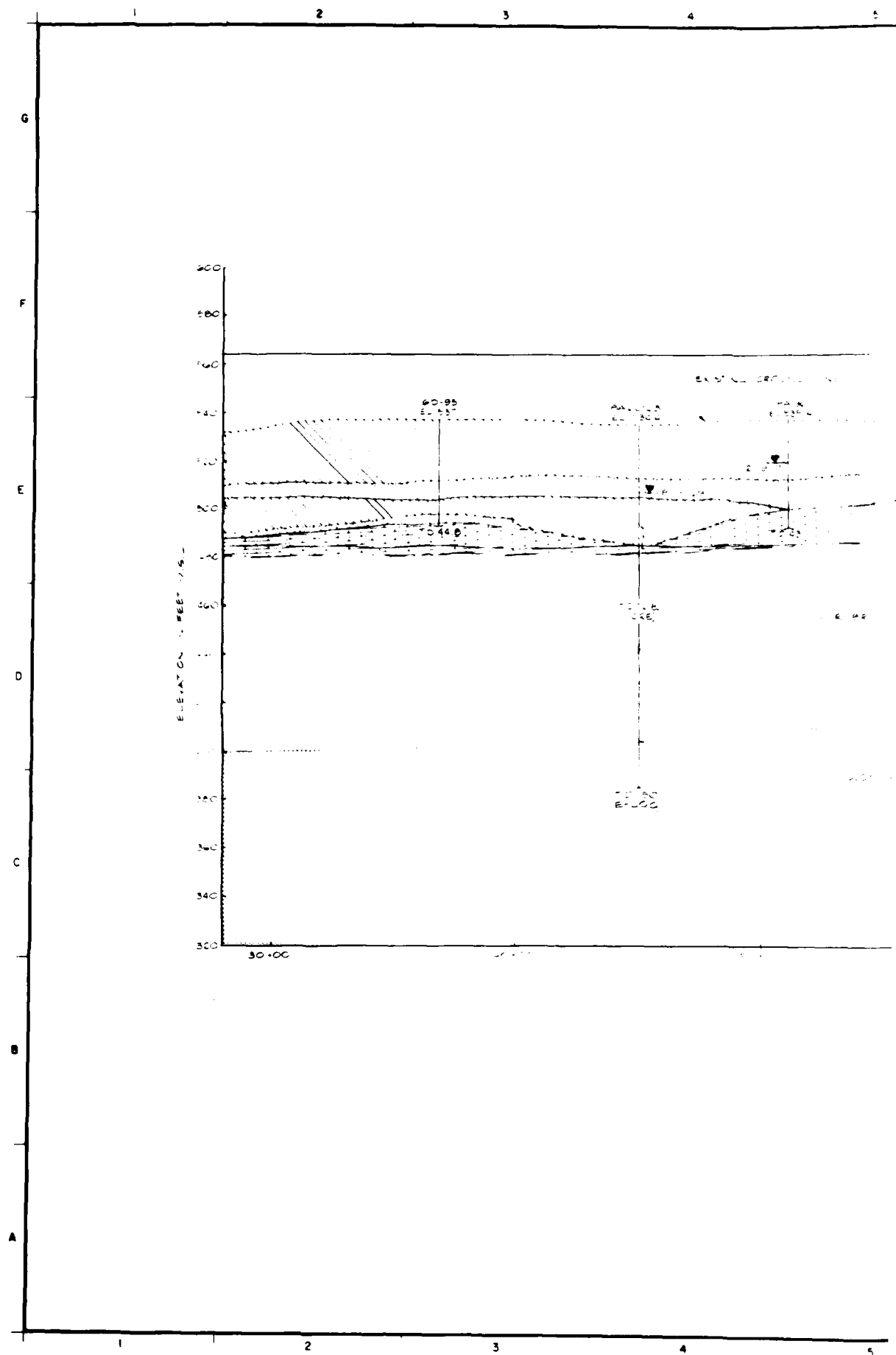
NOTES

1. DETAILED LOGS OF CORE BORINGS ARE PRESENTED ON SECTIONS THRU SECTION.
2. WHILE THE BORINGS AND GEOLOGIC INTERPRETATIONS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS FOR THE VERTICAL AND HORIZONTAL REACHES AS SHOWN, VARIATIONS IN CHARACTERISTICS OF MATERIALS MAY BE ENCOUNTERED.
3. ABSENCE OF GROUND WATER LEVELS OPPOSITE BORING LOGS DOES NOT NECESSARILY MEAN THAT GROUND WATER WILL NOT BE ENCOUNTERED AT THE LOCATION OR WITHIN THE VERTICAL REACHES OF THE BORINGS.

U.S. ARMY ENGINEER DISTRICT FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY JOE POOL LAKE MOUNTAIN VIEW, TEXAS	
EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
GEOLOGIC PROFILE EMBANKMENT CENTERLINE (STATION 0+00 TO STATION 62+00)	
BY W. D. DAWSON 63-8-8-0093	
DATED JULY 1961	
DRAWING NUMBER	SHEET NO. 0

8 TO ACCOMPANY FINAL FOUNDATION REPORT







5 6 7 8 9 10

G

F

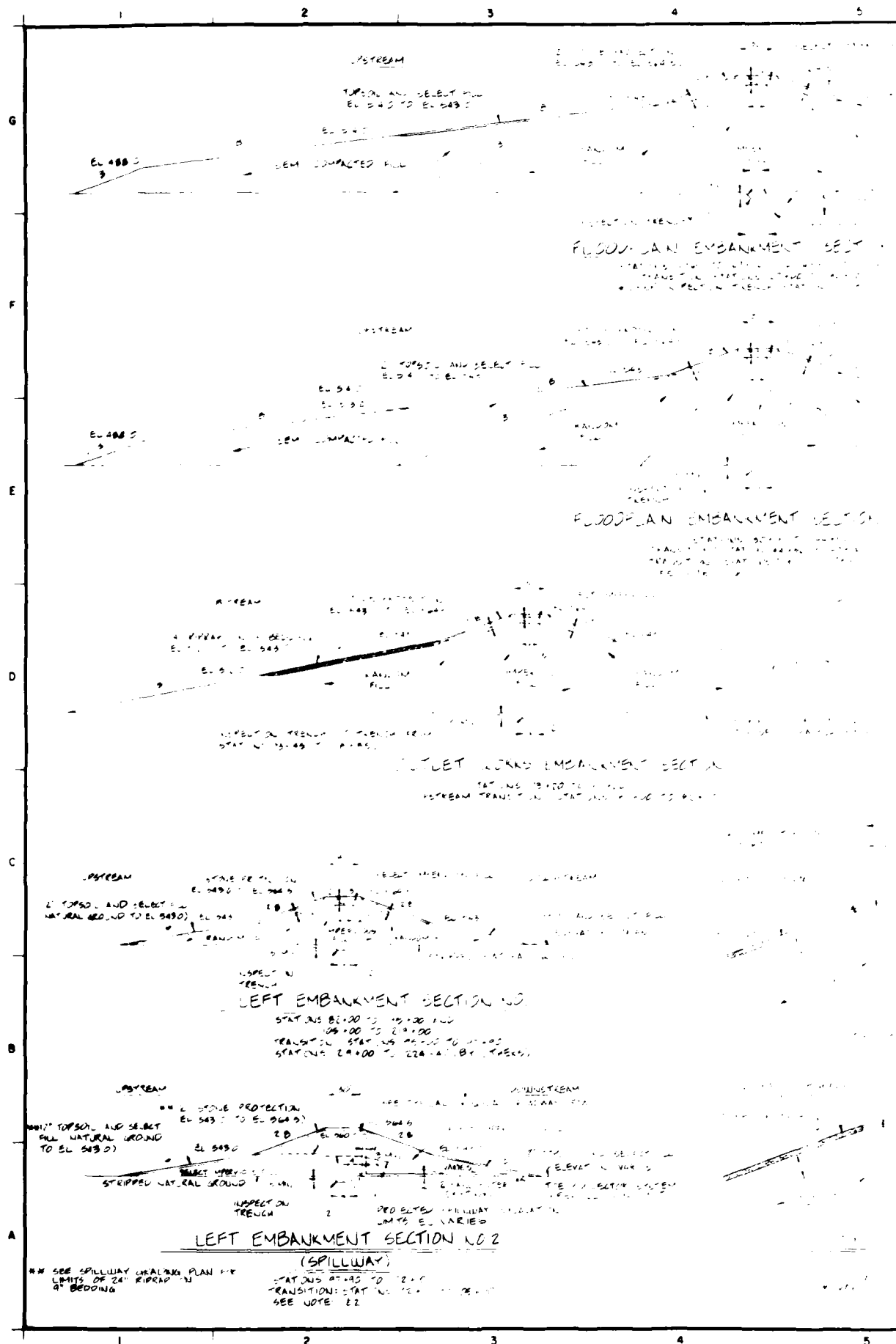
E

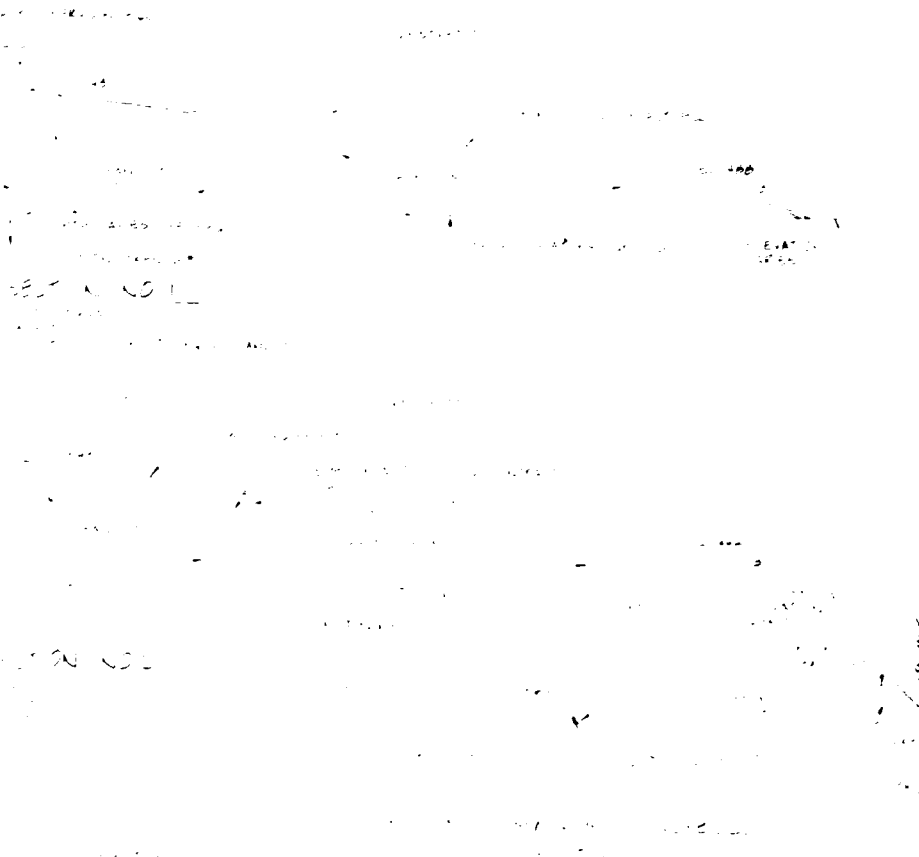
D

C

B

U.S. ARMY ENGINEER DISTRICT FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY	JOHN F. POOL, MAE
DRAWN BY	WILLIAM N. COOPER, TEXAS
EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
GEOLOGIC PROFILE	
EMBANKMENT CENTERLINE	
STATION 190+00 TO 225+00	
BY	DAVID W. B. B. COOPER
DATE	JULY 92
DRAWING NUMBER	SHEET NO.
OF	14





NOTES:
1. SEE THE DESIGN AND CONSTRUCTION OF THE EMBANKMENT AND SPILLWAY WORKS FOR THE PROPOSED PROJECT.
2. THE EMBANKMENT SHALL BE CONSTRUCTED TO THE FOLLOWING ELEVATION: 100.00 FT. AT THE DOWNSTREAM END AND 105.00 FT. AT THE UPSTREAM END.
3. THE SPILLWAY SHALL BE CONSTRUCTED TO THE FOLLOWING ELEVATION: 100.00 FT. AT THE DOWNSTREAM END AND 105.00 FT. AT THE UPSTREAM END.
4. THE OUTLET SHALL BE CONSTRUCTED TO THE FOLLOWING ELEVATION: 100.00 FT. AT THE DOWNSTREAM END AND 105.00 FT. AT THE UPSTREAM END.

STATION	ELEVATION
1+00	100.00
2+00	100.00
3+00	100.00
4+00	100.00
5+00	100.00
6+00	100.00
7+00	100.00
8+00	100.00
9+00	100.00
10+00	100.00

AT THE POINT DETECTED THE ABOVE ELEVATION SHALL BE DETERMINED BY MEANS OF A LEVEL. THE ABOVE ELEVATION SHALL BE USED FOR THE PURPOSE OF DETERMINING THE ELEVATION OF THE EMBANKMENT AND SPILLWAY WORKS. THE ABOVE ELEVATION SHALL BE USED FOR THE PURPOSE OF DETERMINING THE ELEVATION OF THE OUTLET WORKS.



ITEM	DESCRIPTION	QUANTITY
1	EMBANKMENT	100.00
2	SPILLWAY	100.00
3	OUTLET	100.00
4	GRASS	100.00
5	STONE	100.00
6	CONCRETE	100.00
7	STEEL	100.00
8	WOOD	100.00
9	BRICK	100.00
10	GLASS	100.00

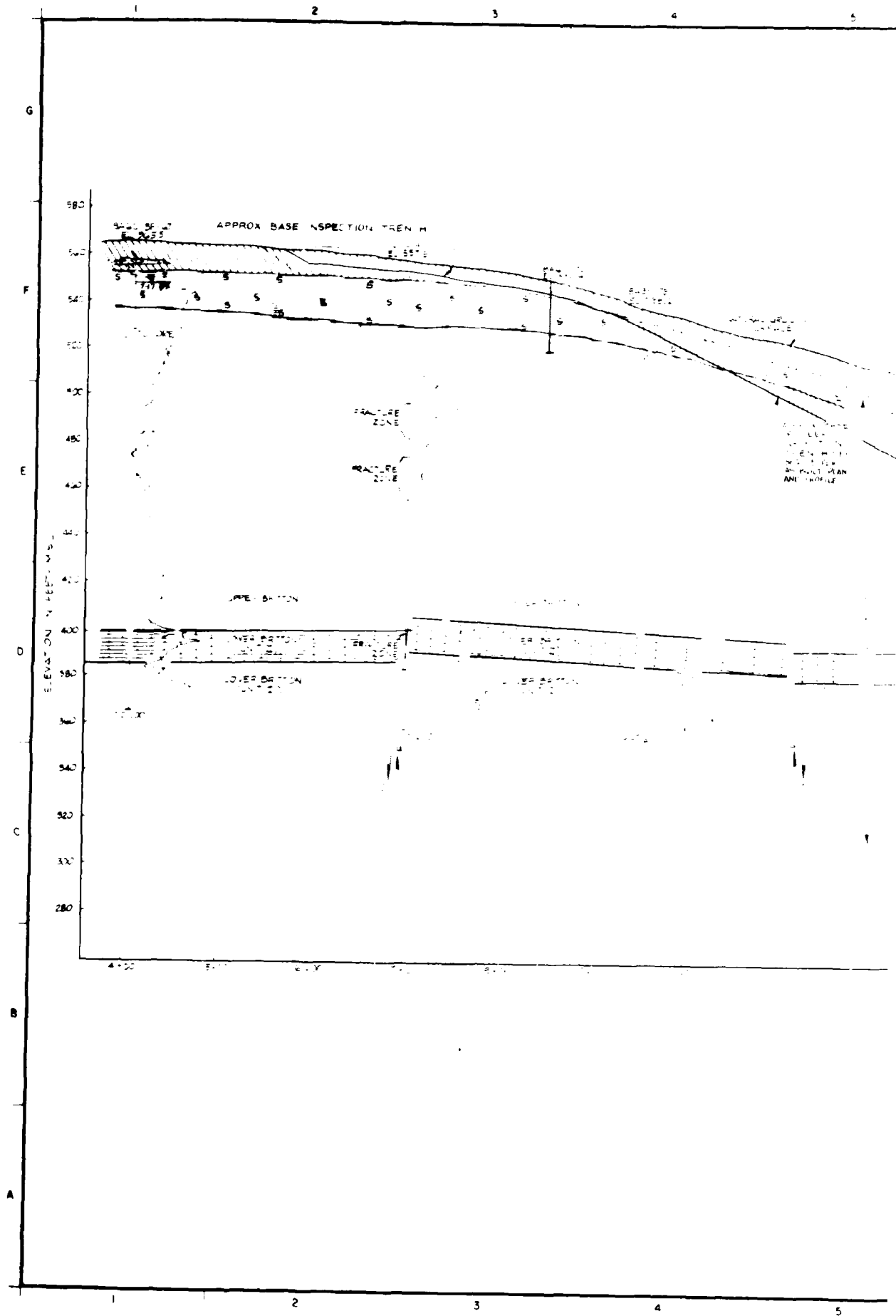
U.S. ARMY ENGINEER DISTRICT, FORT WORTH
CORPS OF ENGINEERS
FORT WORTH, TEXAS

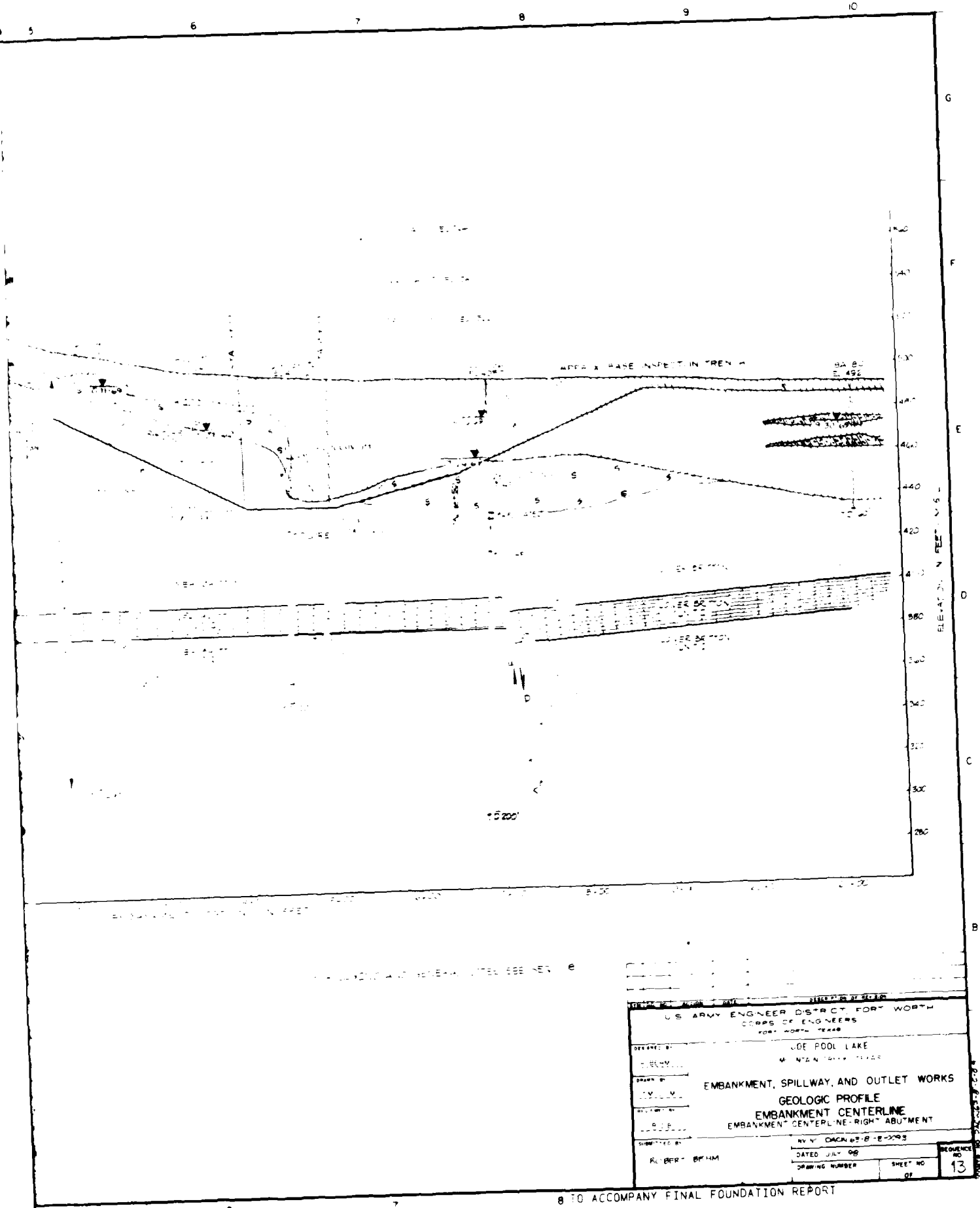
PROJECT: JOE POOL LAKE
W. M. RIVER, TEXAS

EMBANKMENT, SPILLWAY, AND OUTLET WORKS

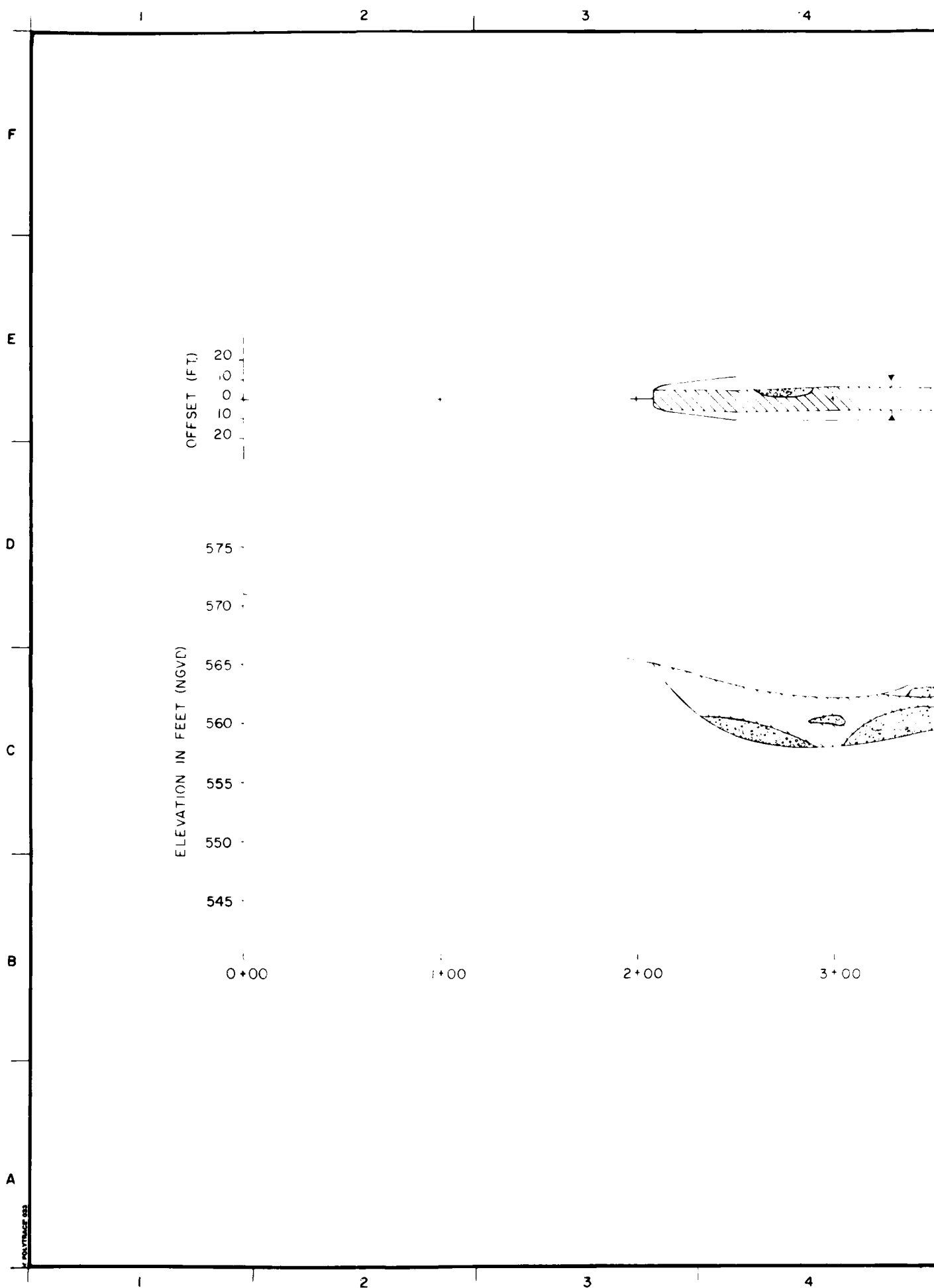
TYPICAL EMBANKMENT SECTIONS

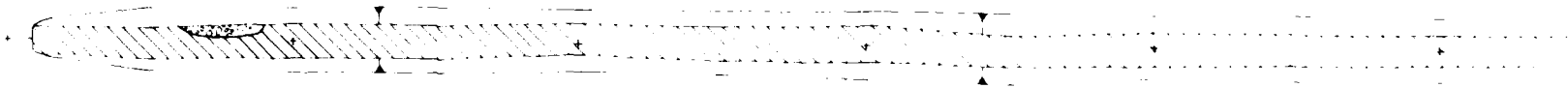
DATE: 10-1-48
DRAWING NUMBER: 12
SHEET NO. 12



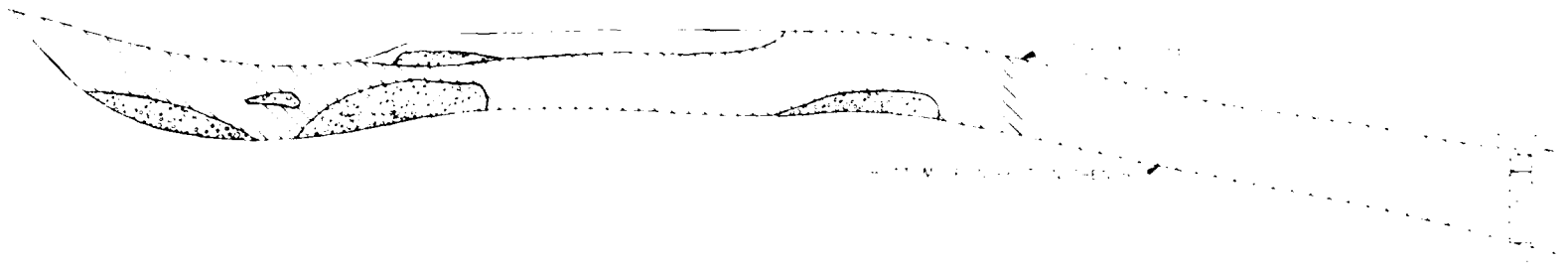


8 TO ACCOMPANY FINAL FOUNDATION REPORT





PLAN



2. CO

3 + 00

4 + 00

5 + 00

6.00

7.00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

36 73

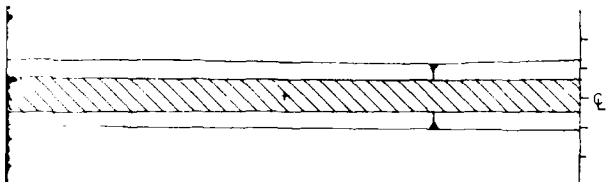
F

E

D

C

B



LEGEND

- OVERBURDEN (RECENT)
- UPPER BRITTON FORMATION (CRETACEOUS)
- 6DC-xx
- CL
- CH
- CLAY
- SAND
- GRAVEL
- SHALE, WEATHERED
- SEEPAGE ZONE
- PRE CONSTRUCTION BORING
LABORATORY DESCRIPTION
(INTERVAL NOT TESTED)

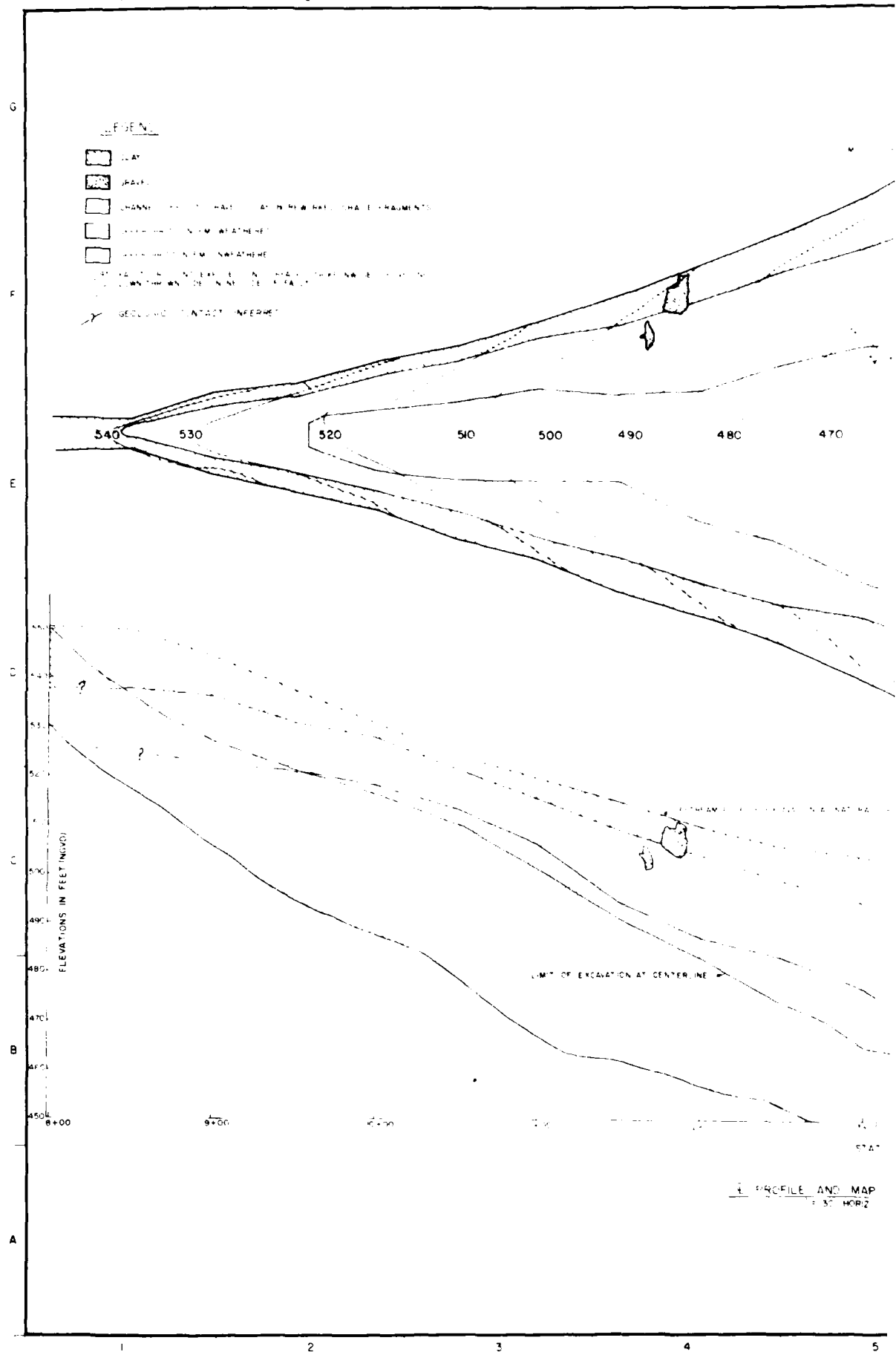
7+00

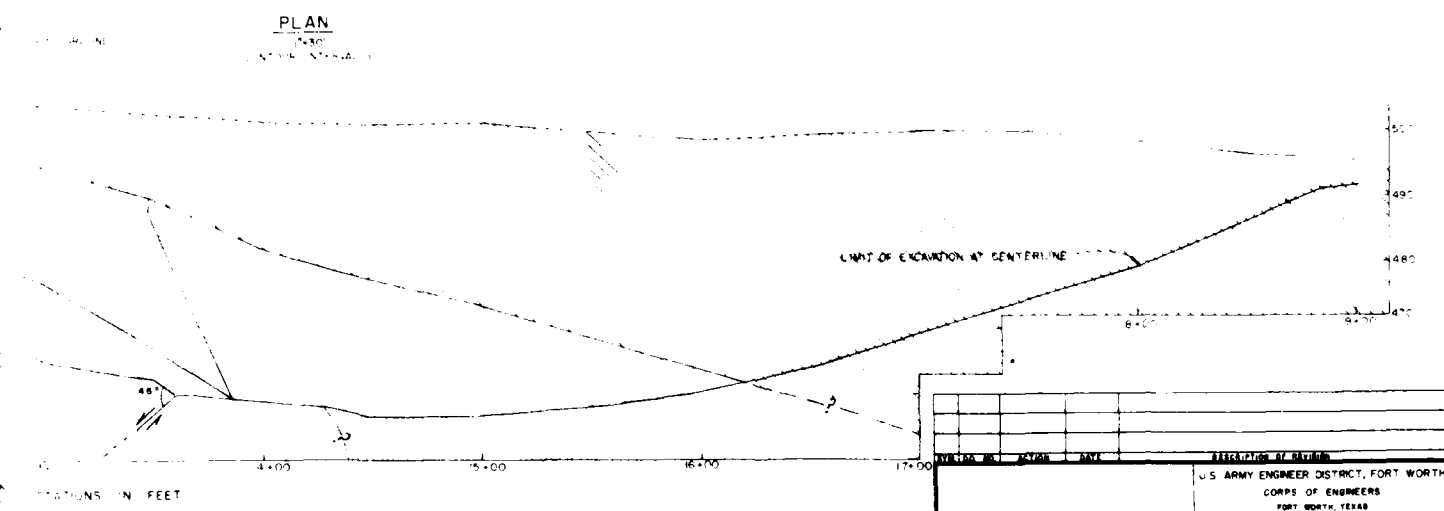
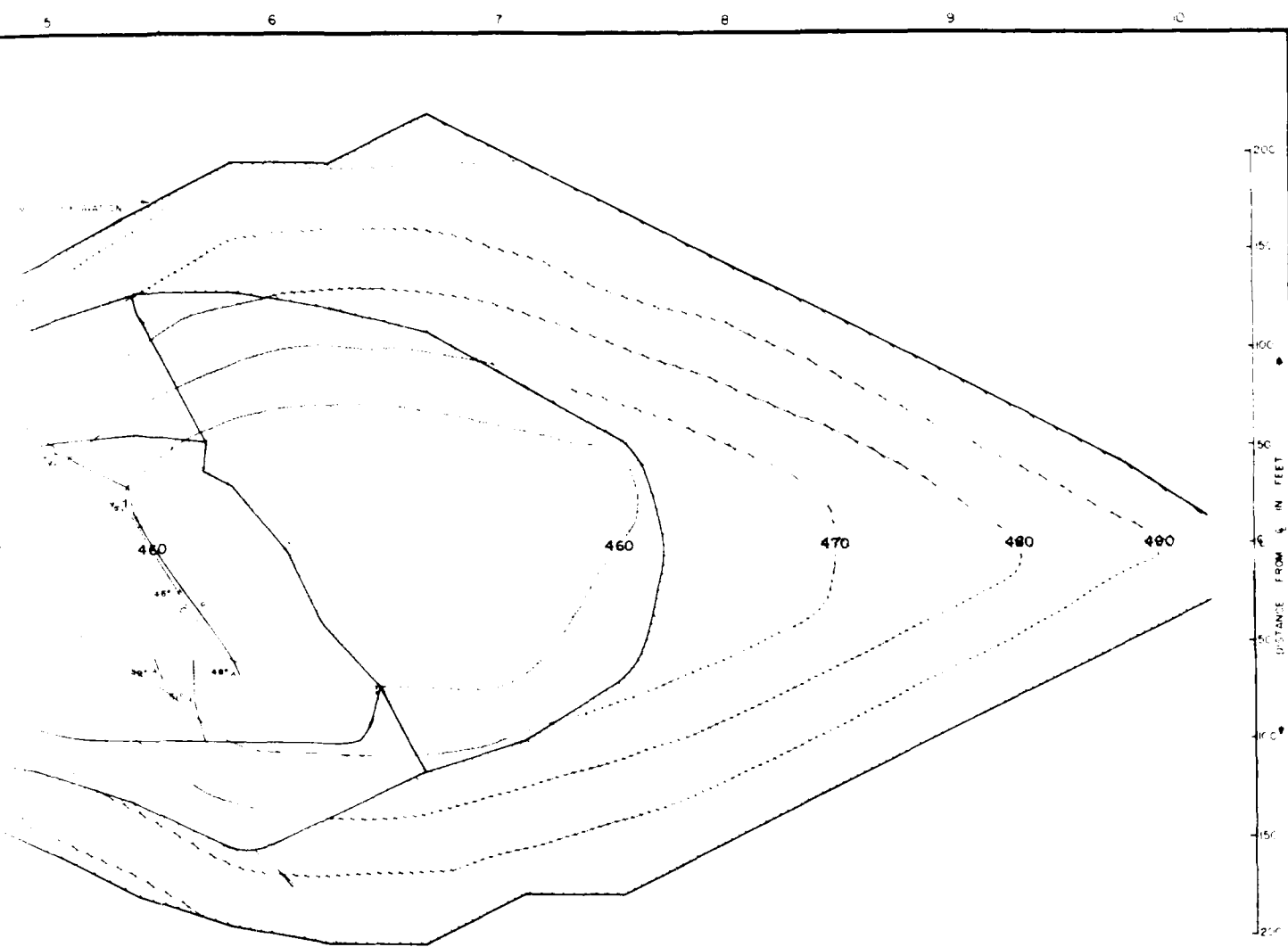
8+00

FOR DETAILED LOGS OF BORINGS SEE
SHEETS 36 THRU 73

ITEM NO.	ACTION	DATE	DESCRIPTION OF REVISION

DESIGNED BY A. MANN		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DRAWN BY J. MANN		JOE POOL LAKE MOUNTAIN CREEK, TEXAS	
REVIEWED BY J. MANN		INSPECTION TRENCH	
SUBMITTED BY J. MANN		AS-BUILT PLAN AND PROFILE	
ENGINEER		STATION 0+00 TO 8+00	
		INVITATION NO.	DATE
		CONTRACT NO.	
		DRAWING NUMBER	SHEET NO. OF
			14

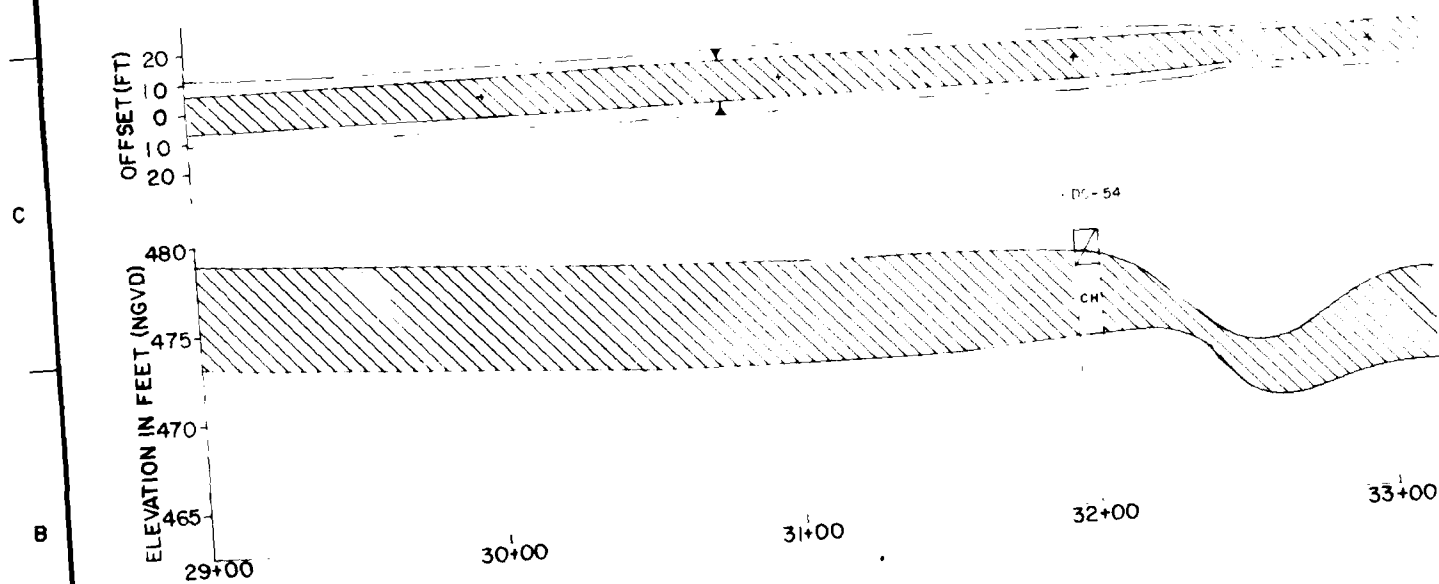
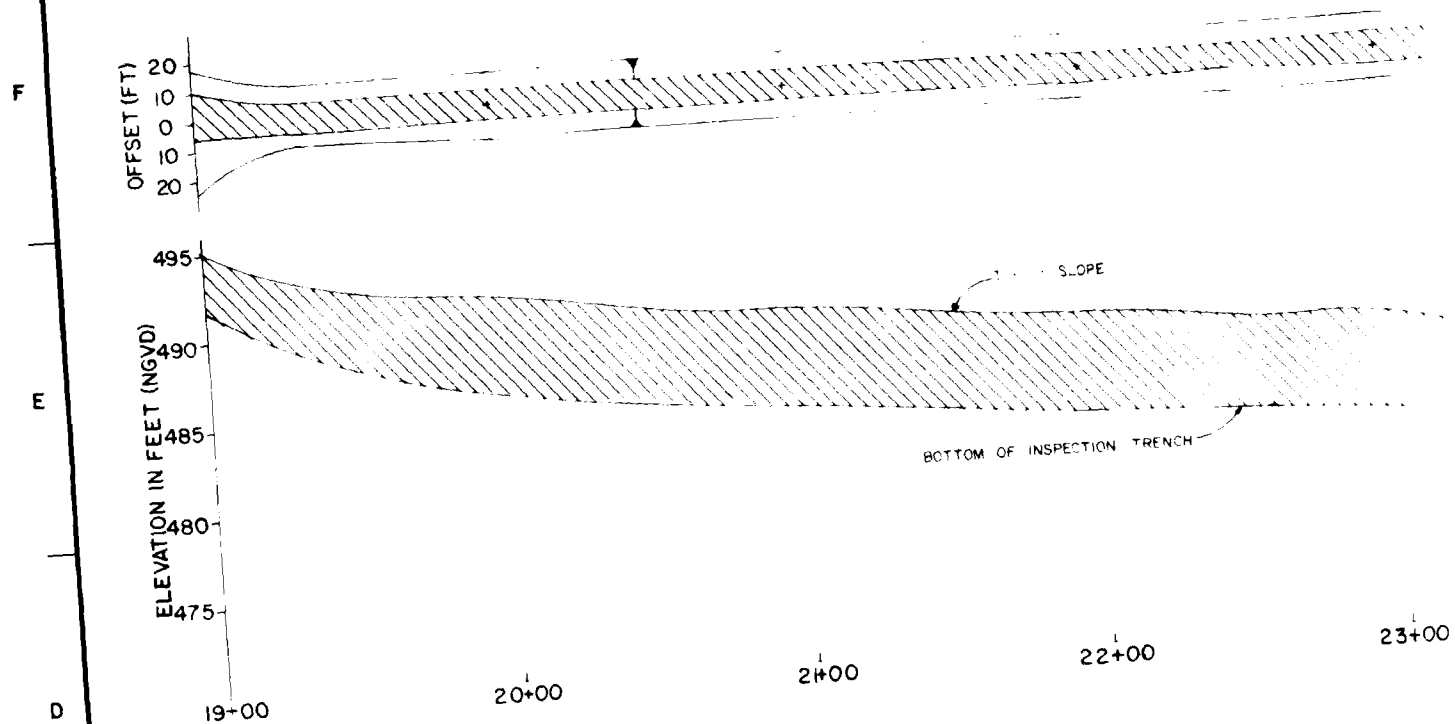




MAP OF UPSTREAM EXCAVATION SLOPE

DESIGNED BY A. MARR		JOE POOL LAKE MOUNTAIN CREEK, TEXAS	
DRAWN BY C. KIRBY		RIGHT ABUTMENT DEEP INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 8+00 TO 19+00	
REVIEWED BY R. BEHM			
SUBMITTED BY ROBERT BEHM		CONTR. NO.	DATED
ENGINEER		DRAWING NUMBER	SHEET NO. 15

TO ACCOMPANY FINAL FOUNDATION REPORT



A

4

5

6

7

8

PLAN

+AP 1-13

CH

TRENCH

00

23+00

24+00

25+00

26+00

27+00

PROFILESTATIONS IN FEET
(LOOKING UPSTREAM)PLAN

00

33+00

34+00

35+00

36+00

37+00

PROFILESTATIONS IN FEET
(LOOKING UPSTREAM)

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

NOTES

1. FOR LEGEND SEE PLATE 14.
2. FOR DETAILED LOGS OF BORINGS
PLATES 36 THRU 73.

4

5

6

7

8

8

9

10

F

E

D

C

B

6+00 27+00 28+00 29+00

6+00 37+00 38+00 39+00

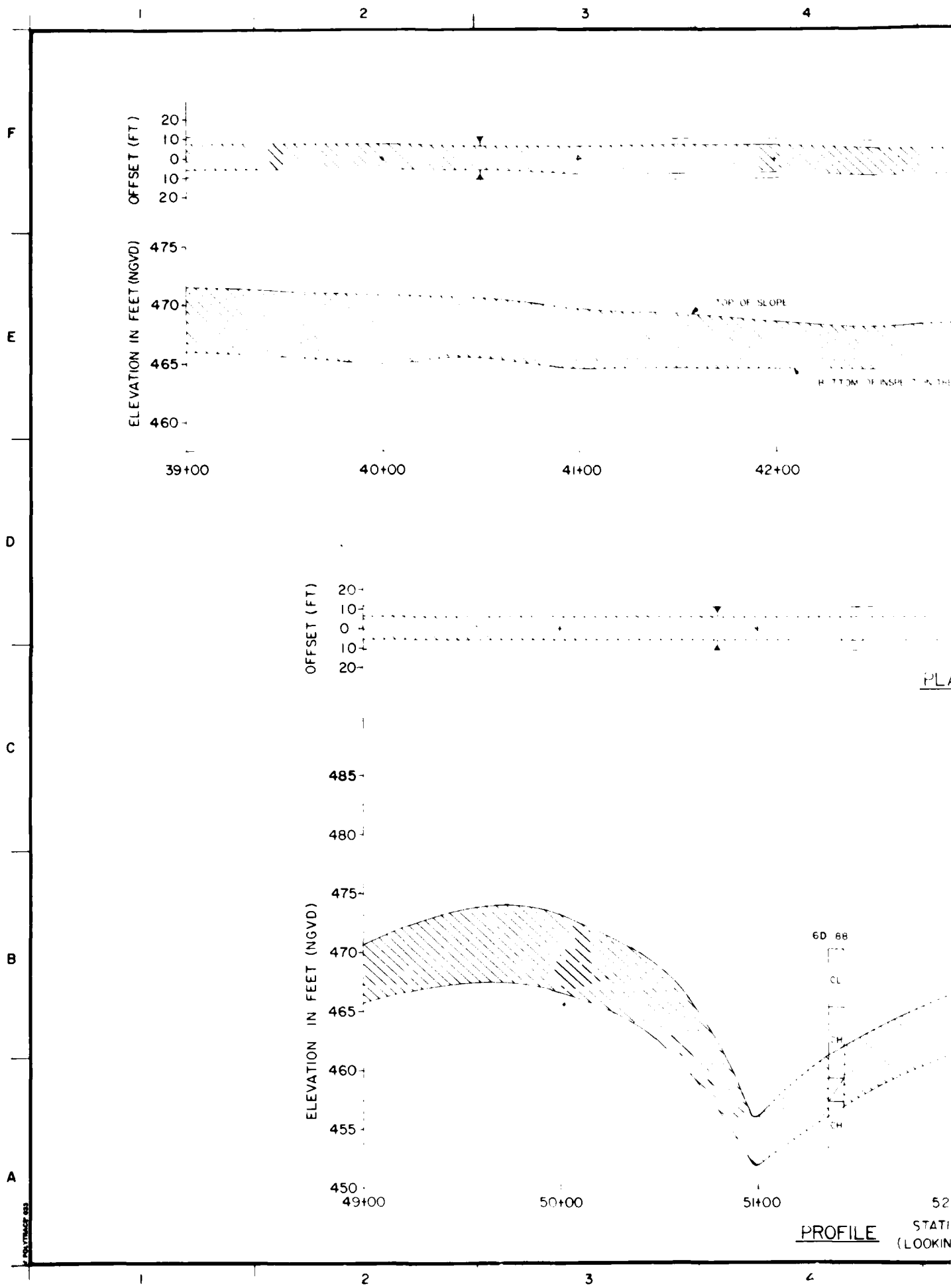
TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 19+00 THRU 39+00	INTEGRITY NO.	ACTION	DATE	DESCRIPTION OF REVISION
DRAWN BY C. KIRBY					
REVIEWED BY R. BEHM					
SUBMITTED BY ROBERT BEHM ENGINEER		INVITATION NO.	DATE	CONTRACT NO.	SEQUENCE NO. 16
		DRAWING NUMBER		SHEET NO. OF	

8

A COMPANY FINAL FOUNDATION REPORT



PLAN

TOP OF SLOPE

HA60 55

BOTTOM OF INSPECTION TRENCH

42+00

43+00

44+00

45+00

46+00

47+00

PROFILE
STATIONS IN FEET
(LOOKING UPSTREAM)

PLAN

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

60 88

CL

CH

CH

51+00

52+00

53+00

54+00

55+00

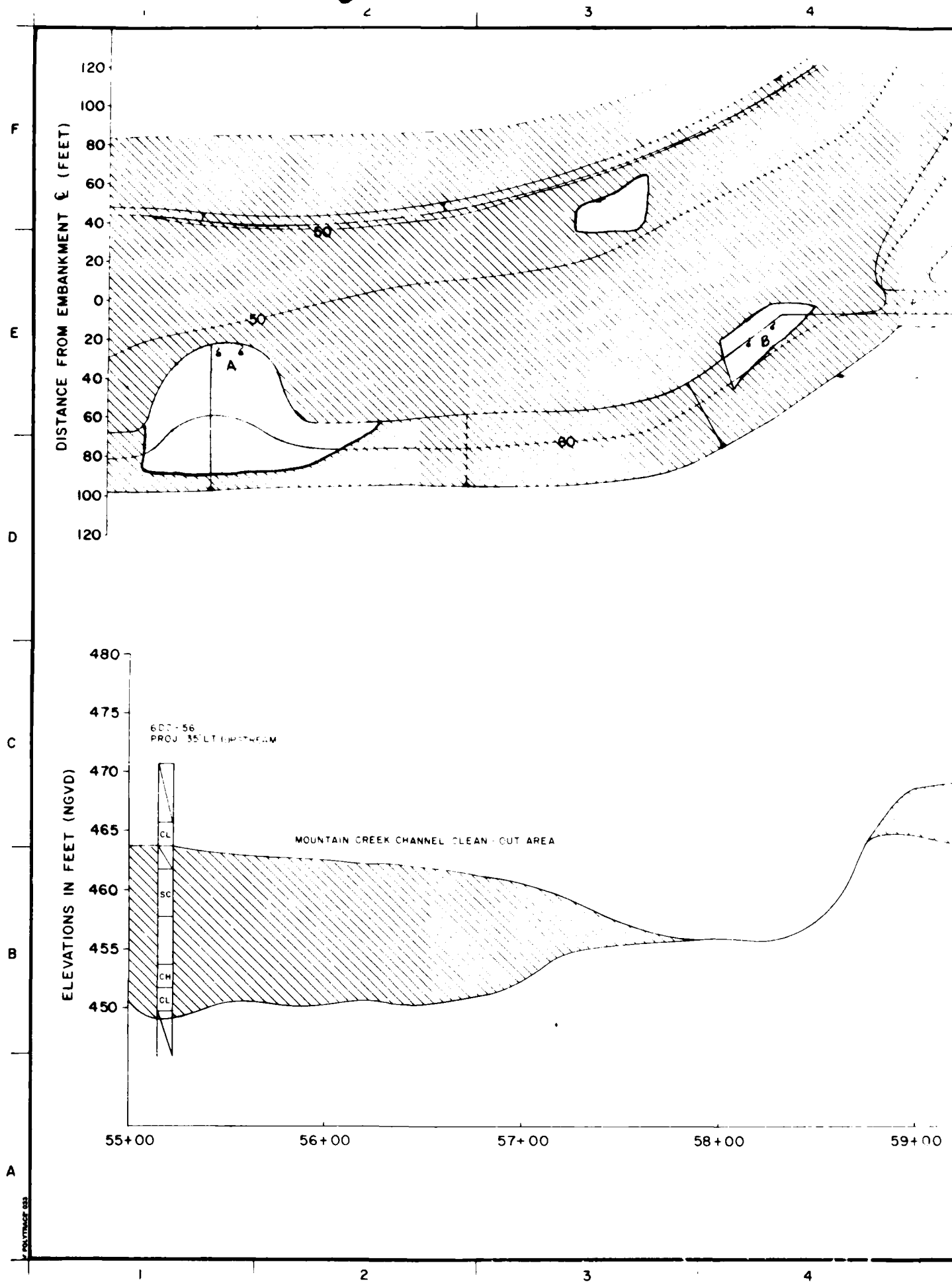
PROFILE
STATIONS IN FEET
(LOOKING UPSTREAM)

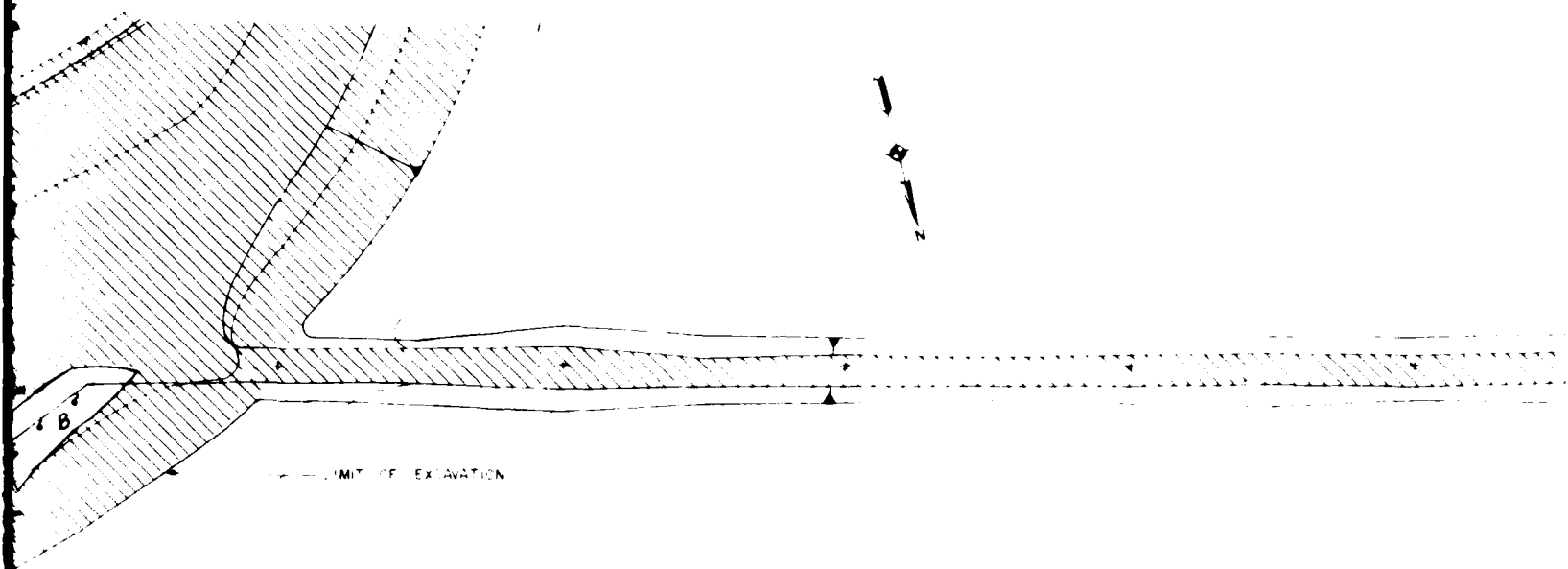


1 FOR LEGEND SEE PLATE 14
2 FOR DETAILED LOGS OF BORINGS
SEE PLATES 36 THRU 73.

E

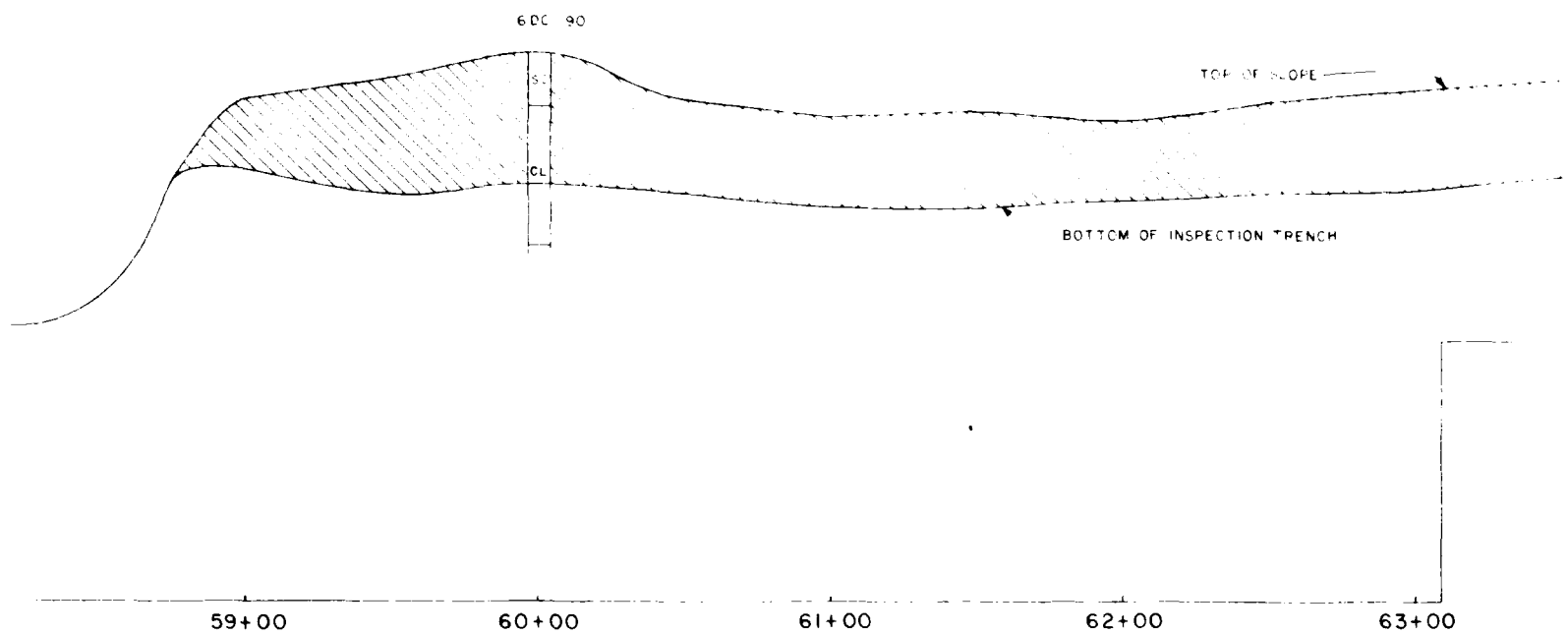
CONTACT NO.





PLAN

CONTINUATION INTERVAL = 10'



PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS SEE PLATES 36 THRU 73

8

9

10

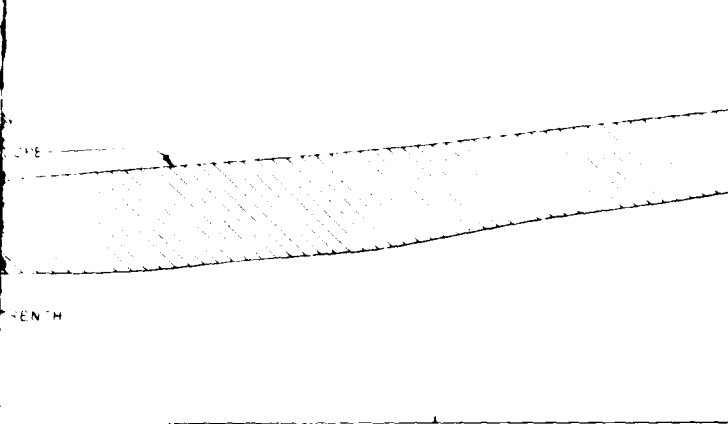
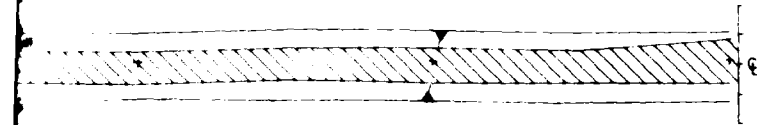
F

E

D

C

B



64+00

65+00

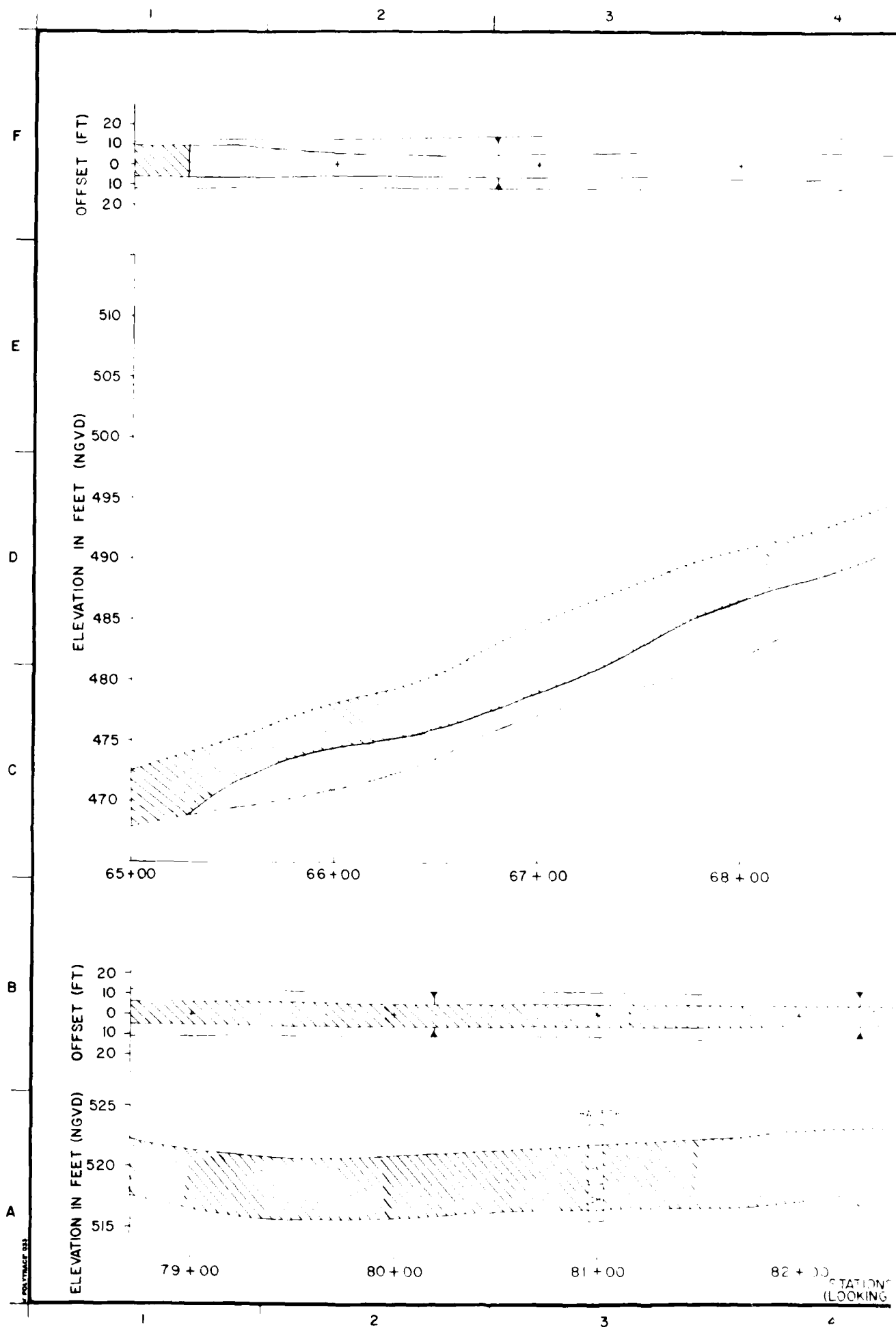
63+00

GS SEE

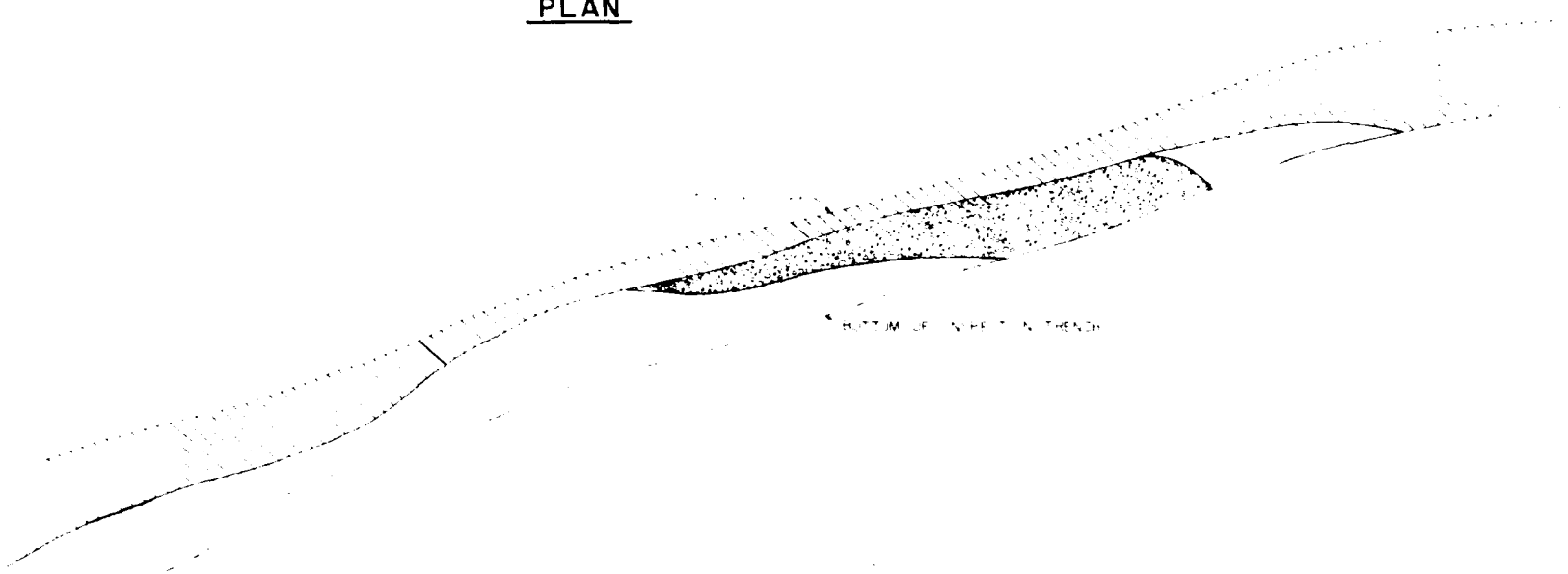
SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY M. MINOR	INSPECTION TRENCH AS-BUILT PLAN AND PROFILE		
REVIEWED BY R. BEHM	STATION 55+00 TO 65+00		
SUBMITTED BY ROBERT BEHM	INVITATION NO.	DATE	SEQUENCE NO.
CONTRACT NO.	DRAWING NUMBER	SHEET NO.	18

8

ACCOMPANY FINAL FOUNDATION REPORT



PLAN



68 + 00

69 + 00

PROFILE

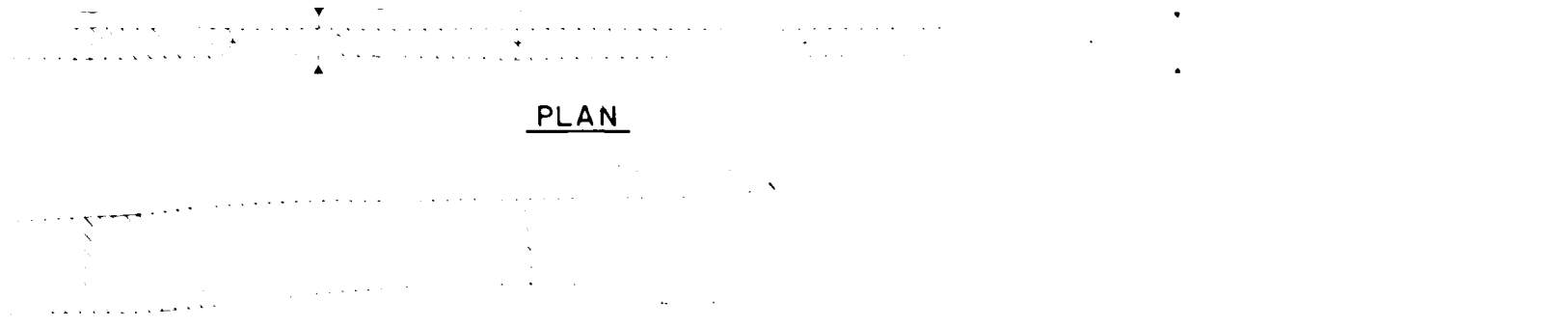
70 + 00

71 + 00

72 + 00

STATIONS IN FEET
(LOOKING UPSTREAM)

PLAN



82 + 00

STATIONS IN FEET
(LOOKING UPSTREAM)

PROFILE

AD-A193 342

COMPLETION OF EMBANKMENT AND SPILLWAY JOE POOL LAKE
MOUNTAIN CREEK TEXAS (U) ARMY ENGINEER DISTRICT FORT
MORRIS TX A J MAR FEB 88

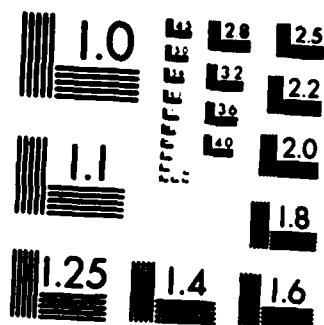
2/3

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

8

9

10

OUTLET WORKS

SEE PLATE NO. 32

78+68

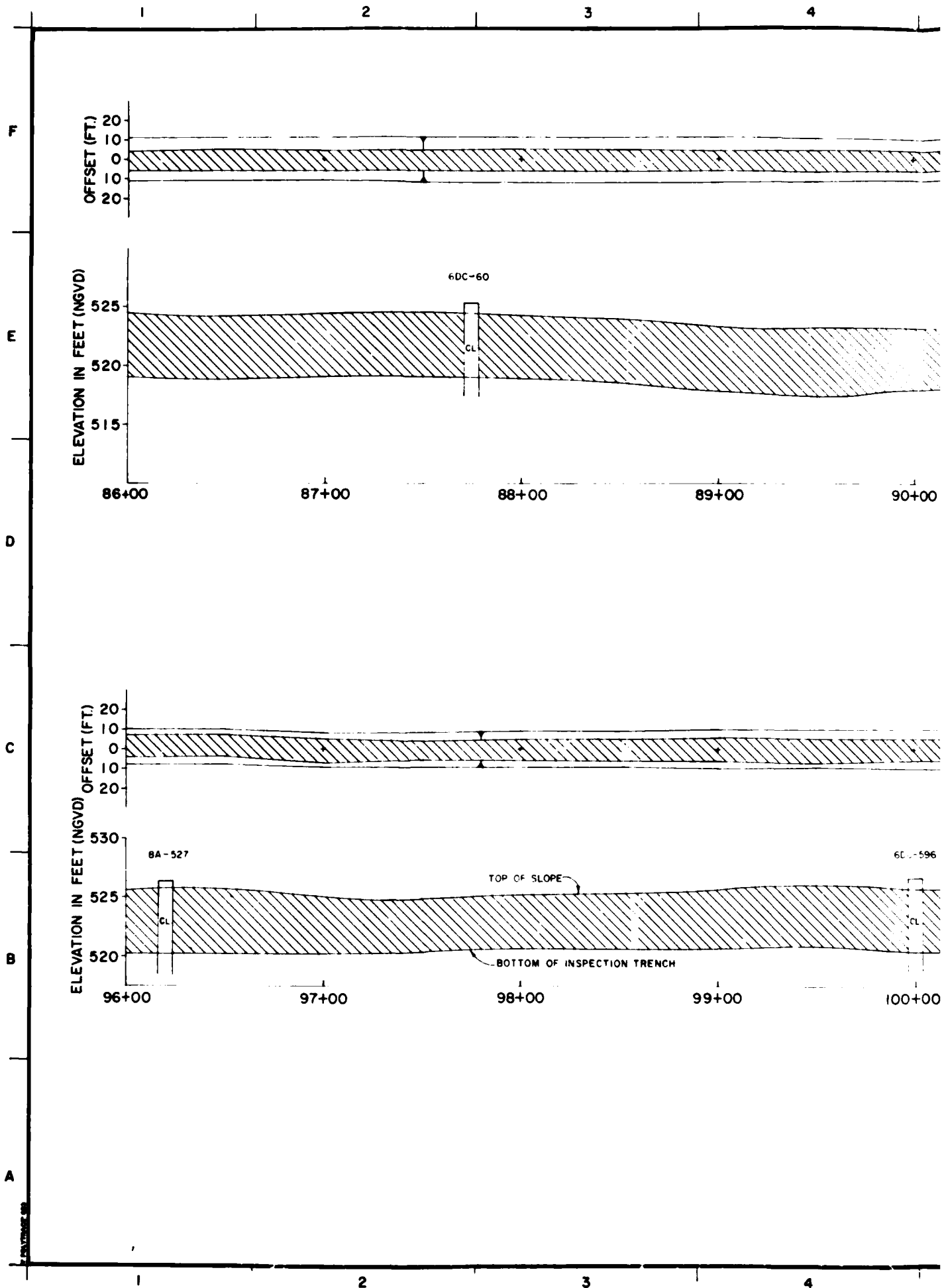
NOTES

1. FOR LEGEND SEE PLATE 14
2. FOR DETAILED LOGS OF BORINGS
SEE PLATES 36 THRU 73

73+00

73+75

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY S. DRYSDALE	INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 65+00 TO 86+00		
REVIEWED BY R. BEHM	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	SHEET NO. 19
	CONTRACT NO.	PROJECT NO.	



4

5

6

7

8

PLAN

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

+00

90+00

91+00

92+00

93+00

94+00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

PLAN

6DC-5%

CL

+00

100+00

101+00

102+00

103+00

104+00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS SEE
PLATES 36 THRU 75

4

5

6

7

8

7

8

9

10

F

E

D

C

B

SLOPE

93+00

94+00

95+00

96+00

8A-61

 SC
 CL
 SC

103+00

104+00

105+00

106+00

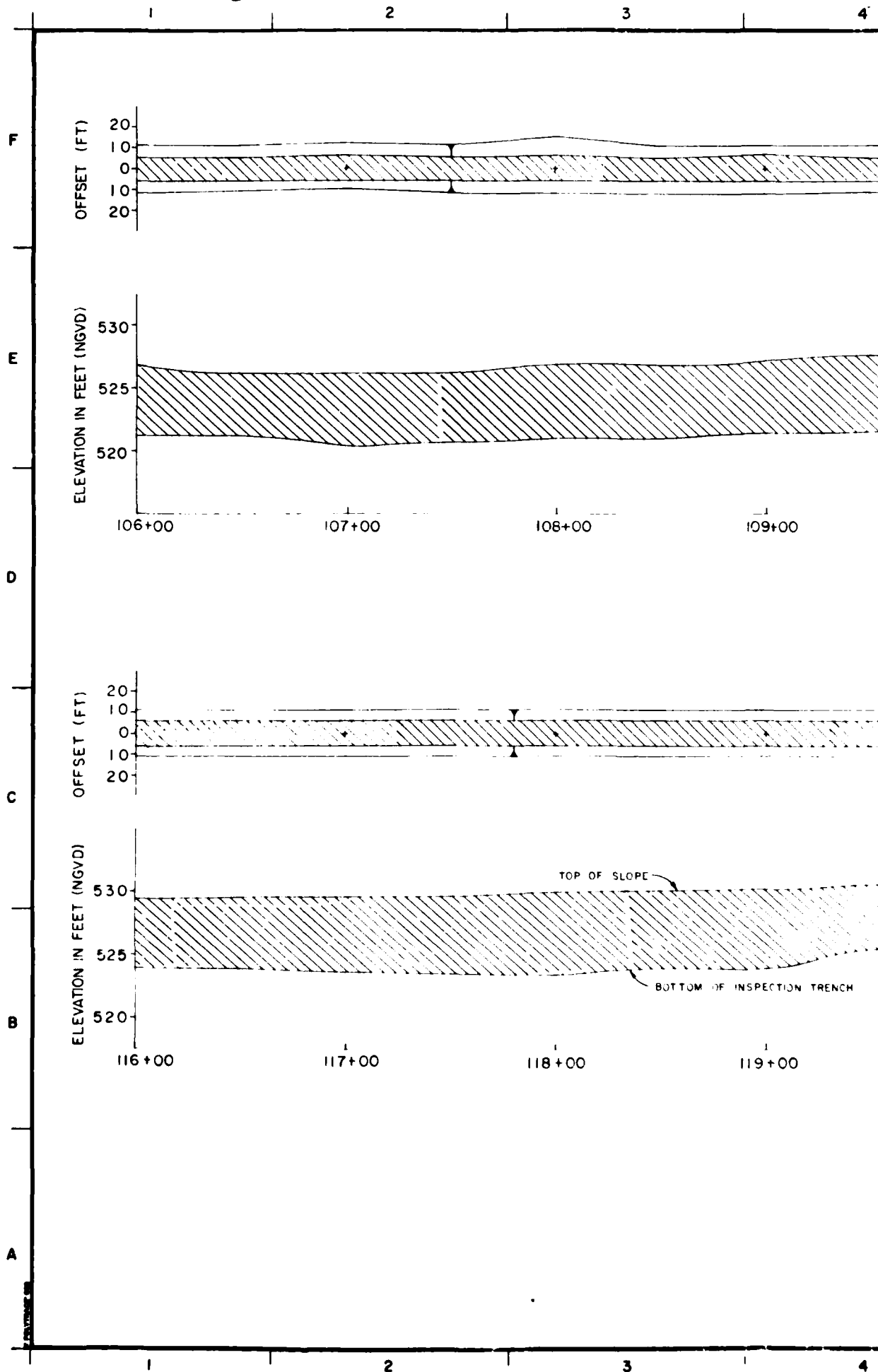
LEGEND SEE PLATE 14
 DETAILED LOGS OF BORINGS SEE
 ES 36 THRU 73

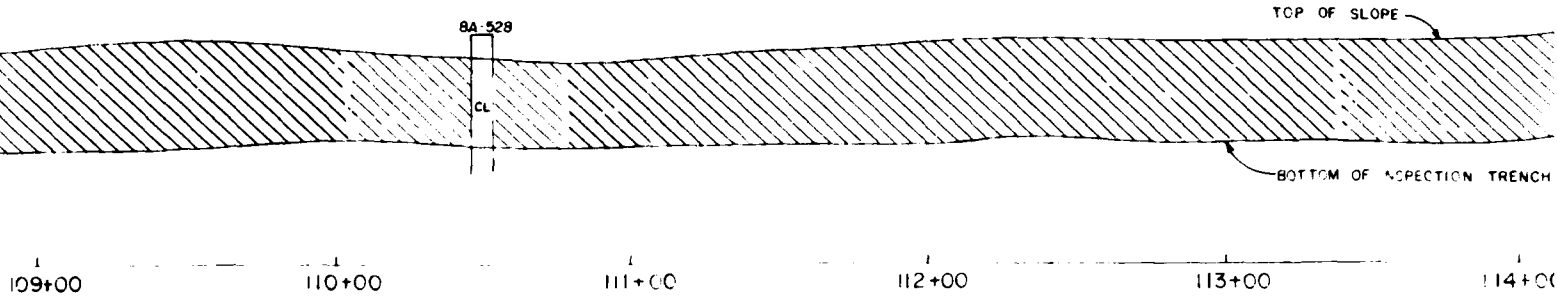
DESIGNED BY A. MARR		CHECKED BY A. MARR		REVIEWED BY R. BEHM		SUBMITTED BY ROBERT BEHM		ENGINEER	
INVESTIGATOR NO.		SECTION		DATE		DESCRIPTION OF REVISION			
						U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
						JOE POOL LAKE MOUNTAIN CREEK, TEXAS			
						INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 86+00 TO 106+00			
						INVITATION NO.		DATE	
						CONTRACT NO.		SHEET NO.	
						DRAWING NUMBER		OF	
								20	

TO ACCOMPANY FINAL FOUNDATION REPORT

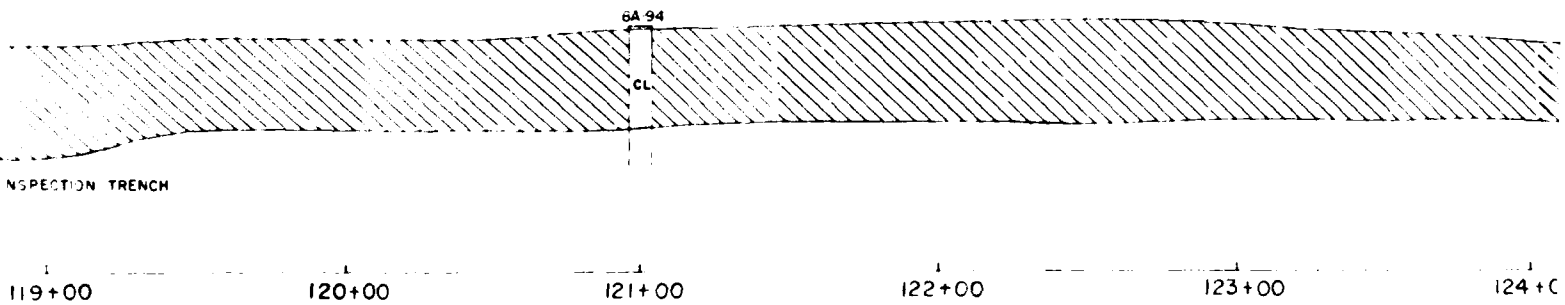
7

8



PLANPROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

PLANPROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS SEE
PLATES 36 THRU 73

7

8

9

10

F

E

D

C

B

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

113+00

114+00

115+00

116+00

123+00

124+00

125+00

126+00

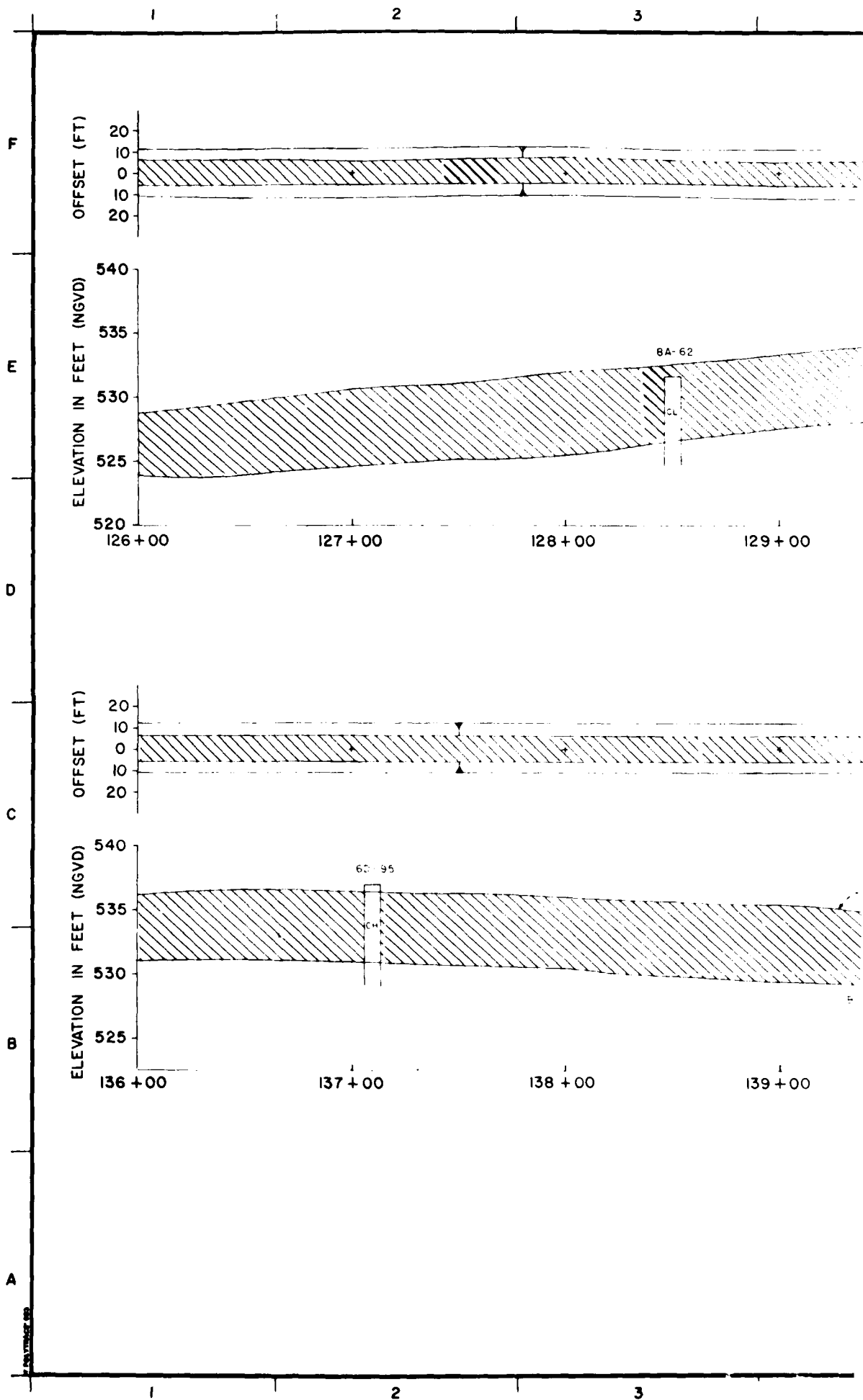
LEGEND SEE PLATE 14

DETAILED LOGS OF BORINGS SEE
PAGES 36 THRU 73

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY S. WOMACK	INSPECTION TRENCH		
REVIEWED BY R. BEHM	AS-BUILT PLAN AND PROFILE STATION 106+00 TO 126+00		
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	
	CONTRACT NO.		
	DRAWING NUMBER	SHEET NO. 21	OF

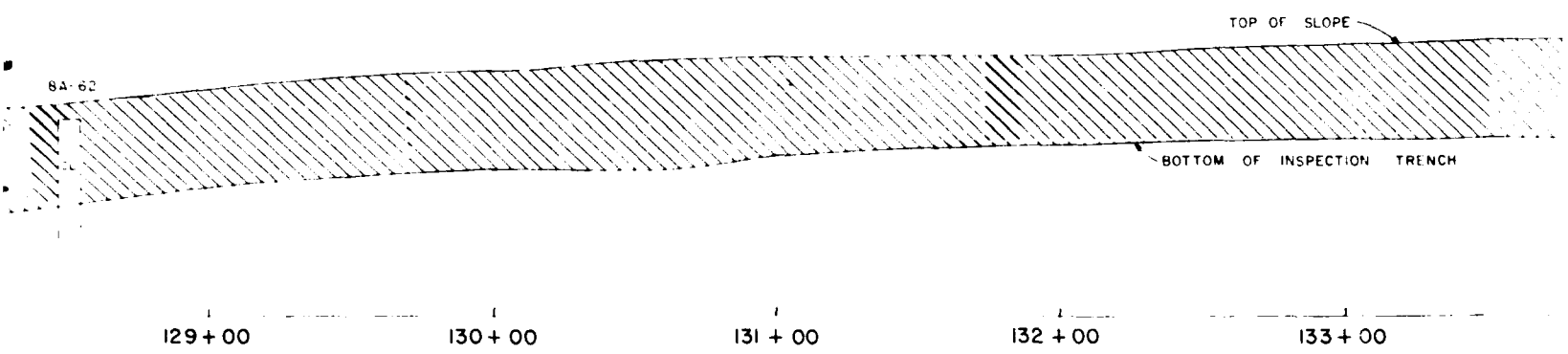
A

TO ACCOMPANY FINAL FOUNDATION REPORT



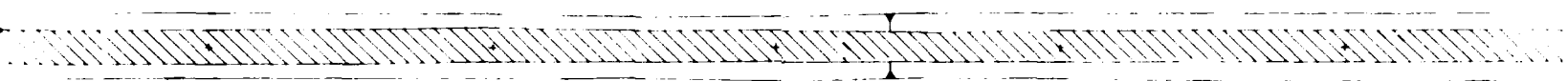


PLAN

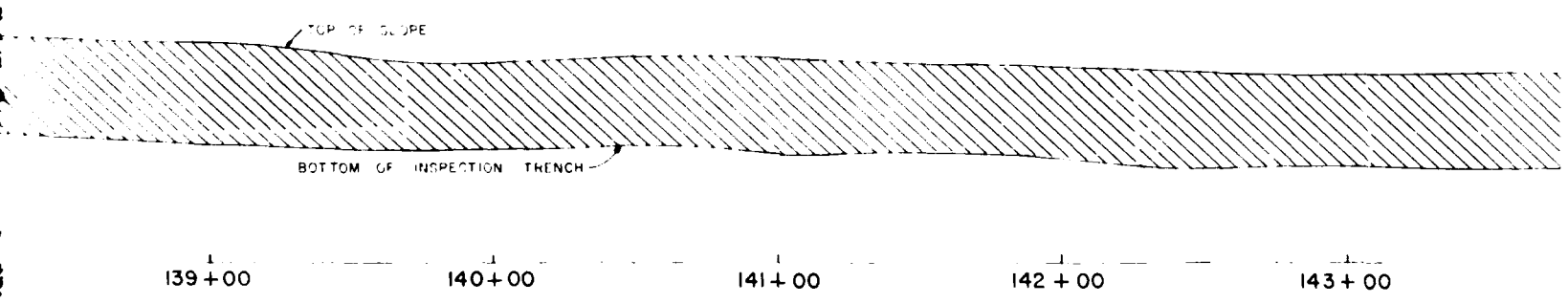


PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)



PLAN

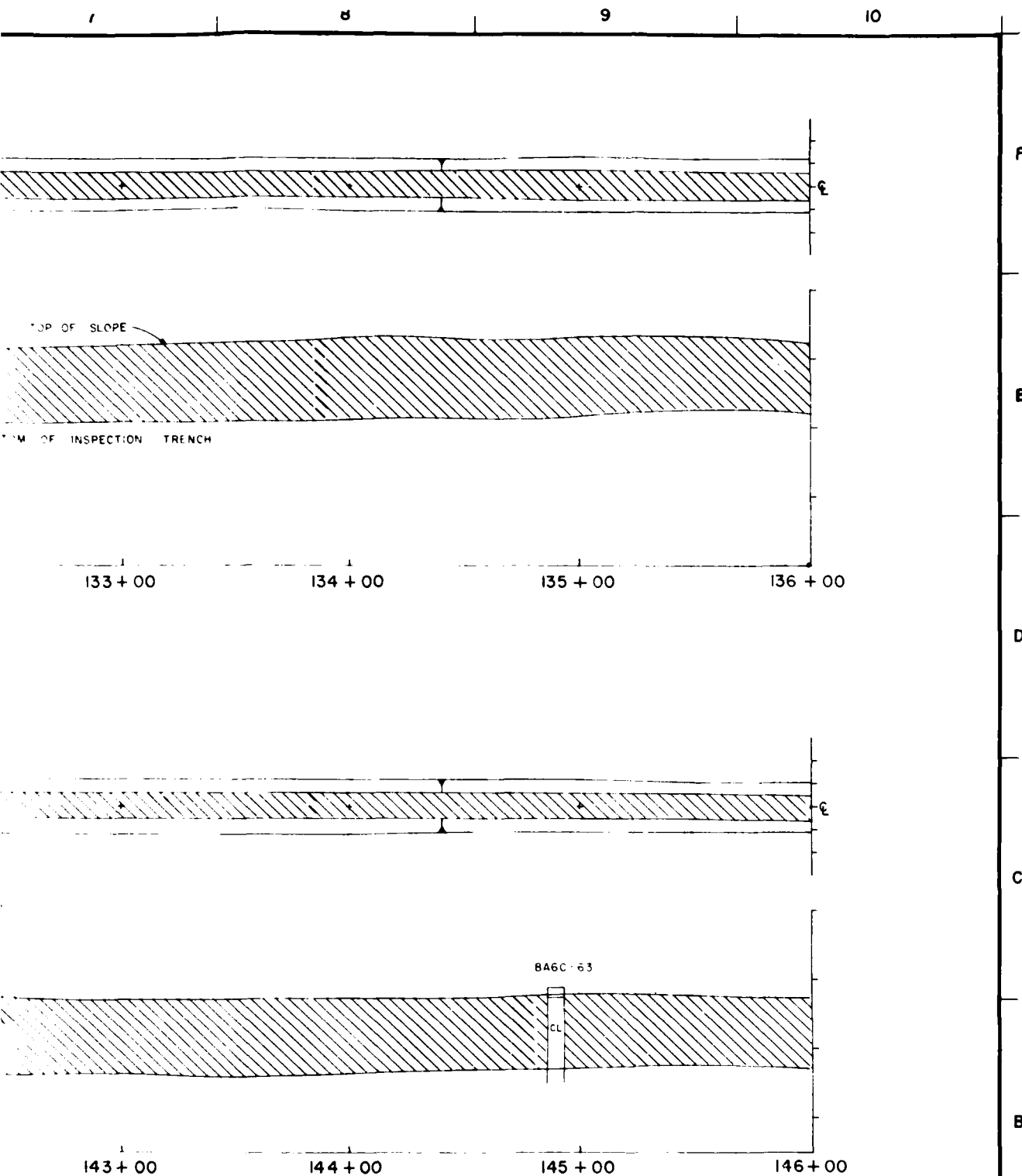


PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

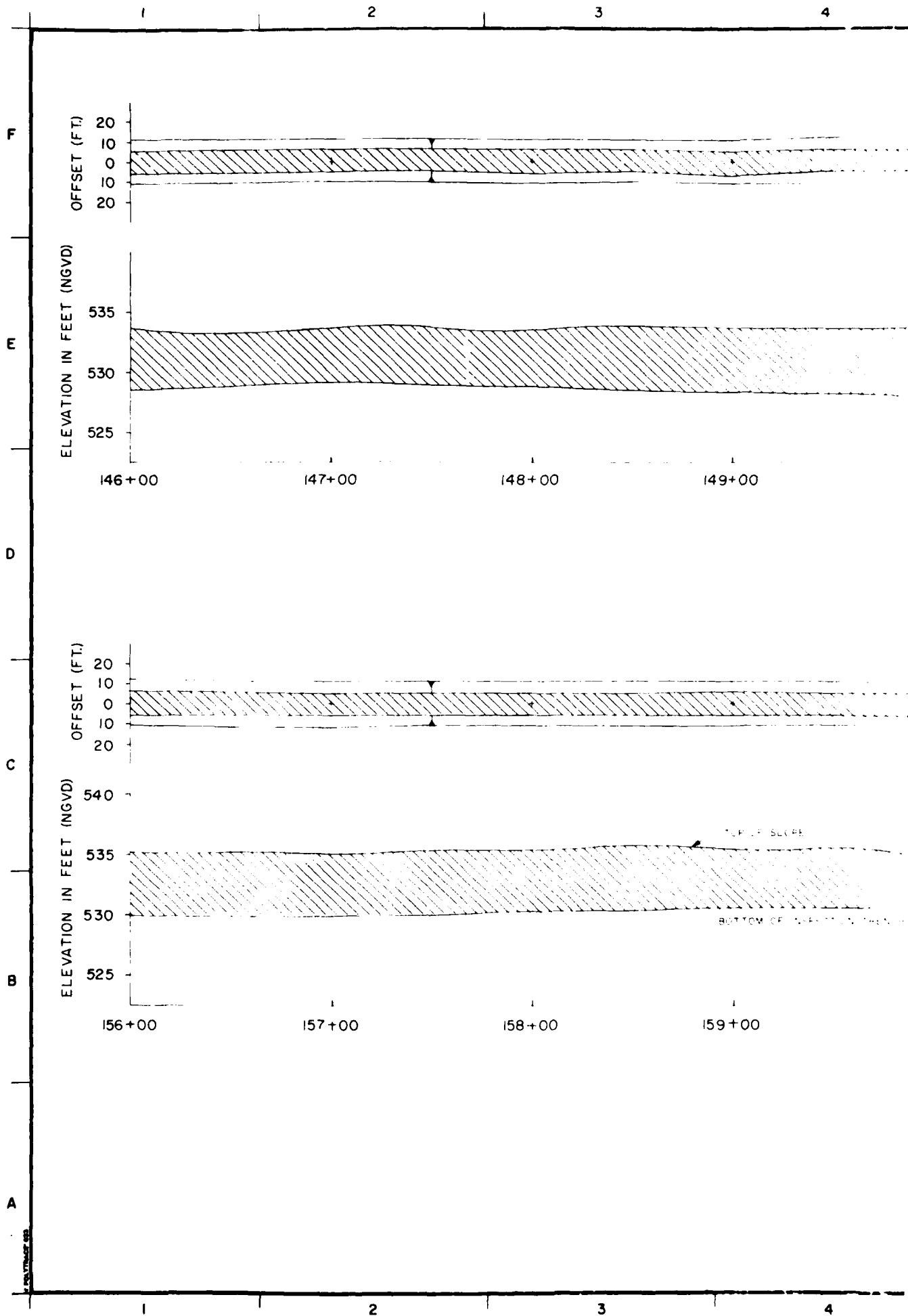
- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS
SEE PLATES 36 THRU 73.



ES
 FOR LEGEND SEE PLATE 14
 FOR DETAILED LOGS OF BORINGS
 SEE PLATES 36 THRU 73

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY S. ROYDALE	INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 126+00 TO 146+00		
REVIEWED BY R. BEHM	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	SHEET NO. 22
	CONTRACT NO.	DRAWING NUMBER	

TO ACCOMPANY FINAL FOUNDATION REPORT



4

5

6

7

8

PLAN

84-96

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

150+00

151+00

152+00

153+00

154+00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

PLAN

84-97

160+00

161+00

162+00

163+00

164+00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS
SEE PLATES 36 THRU 73

4

5

6

7

8

T

8

9

10

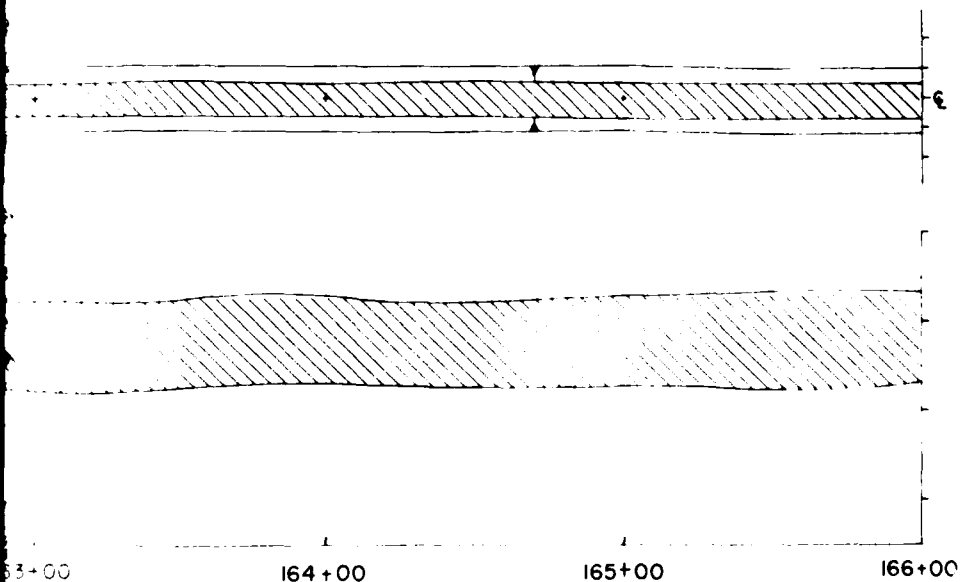
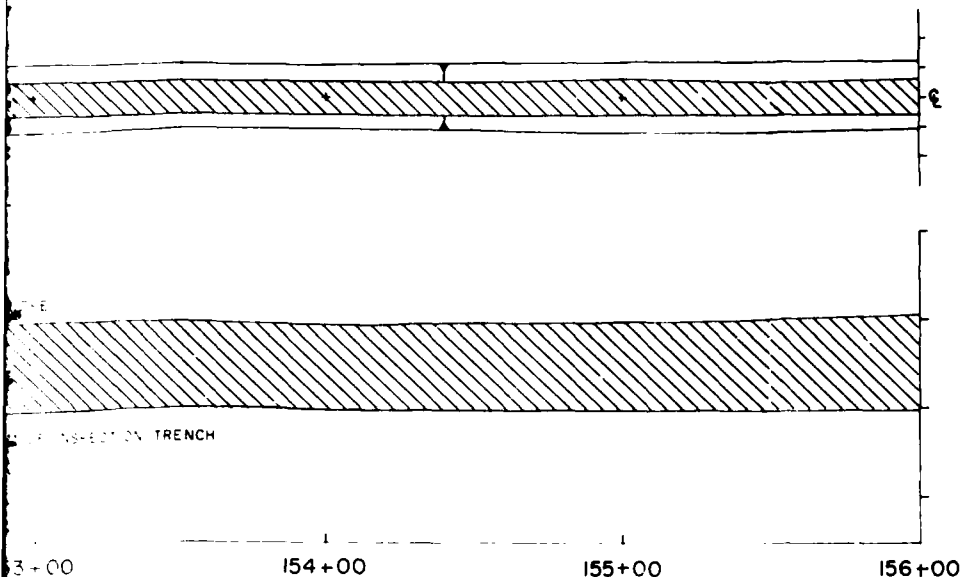
F

E

D

C

B



FOR LEGEND SEE PLATE 14
 FOR DETAILED LOGS OF BORINGS
 SEE PLATES 36 THRU 73

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY A. MARR	INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 146+00 TO 166+00		
REVIEWED BY R. BEHM	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	SHEET NO. 23
	CONTRACT NO.	DRAWING NUMBER	

8

TO ACCOMPANY FINAL FOUNDATION REPORT

F

OFFSET (FT.)
20
10
0
10
20

E

ELEVATION IN FEET (NGVD)
540
535
530

60C-38

CL

166+00

167+00

168+00

169+00

D

C

OFFSET (FT.)
20
10
0
10
20

B

ELEVATION IN FEET (NGVD)
540
535
530

176+00

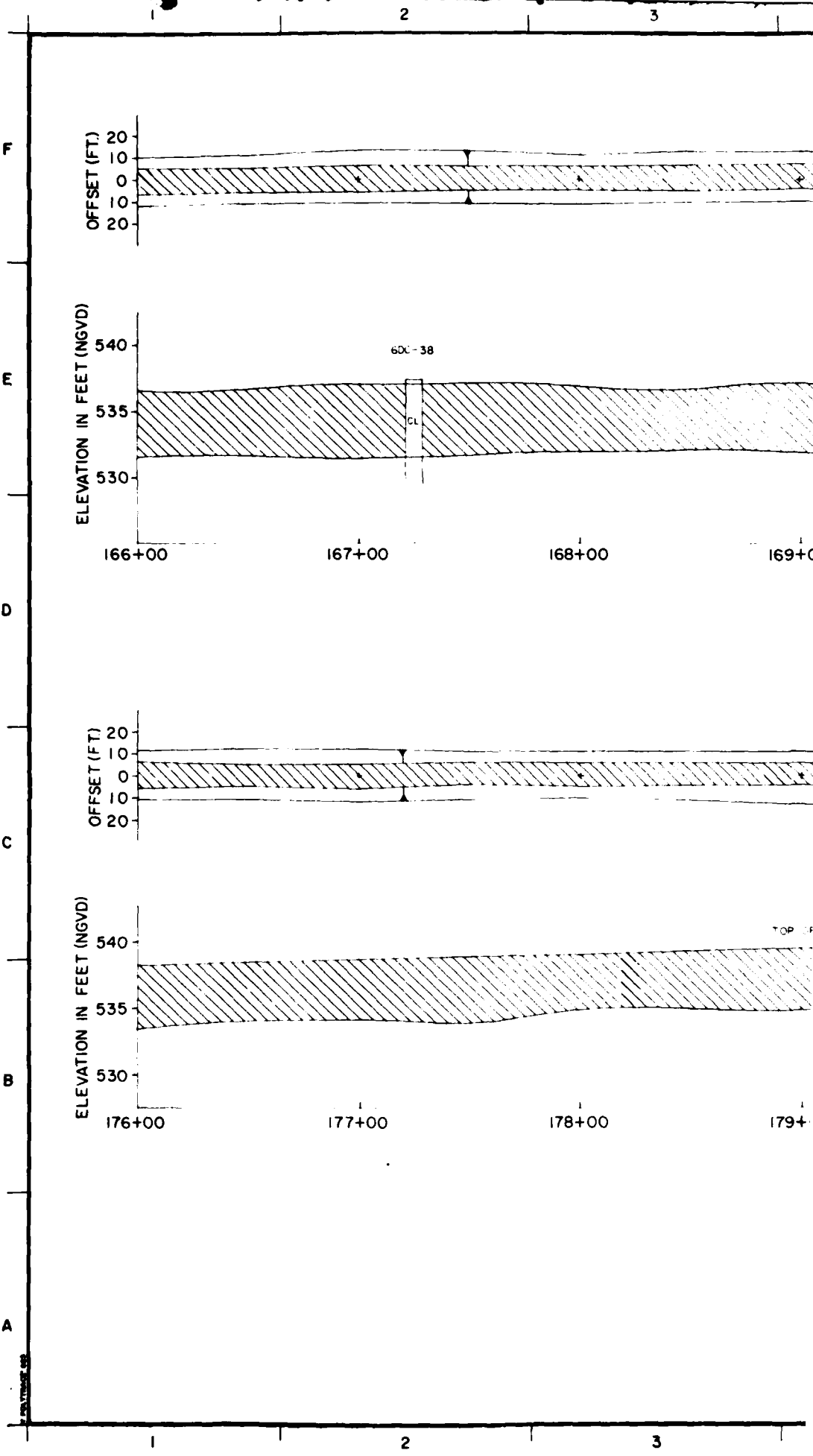
177+00

178+00

179+00

A

SECTION 38



4

5

6

7

PLAN

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

169+00

170+00

171+00

172+00

173+00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

PLAN

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

179+00

180+00

181+00

182+00

183+00

PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

1 FOR LEGEND SEE PLATE 14

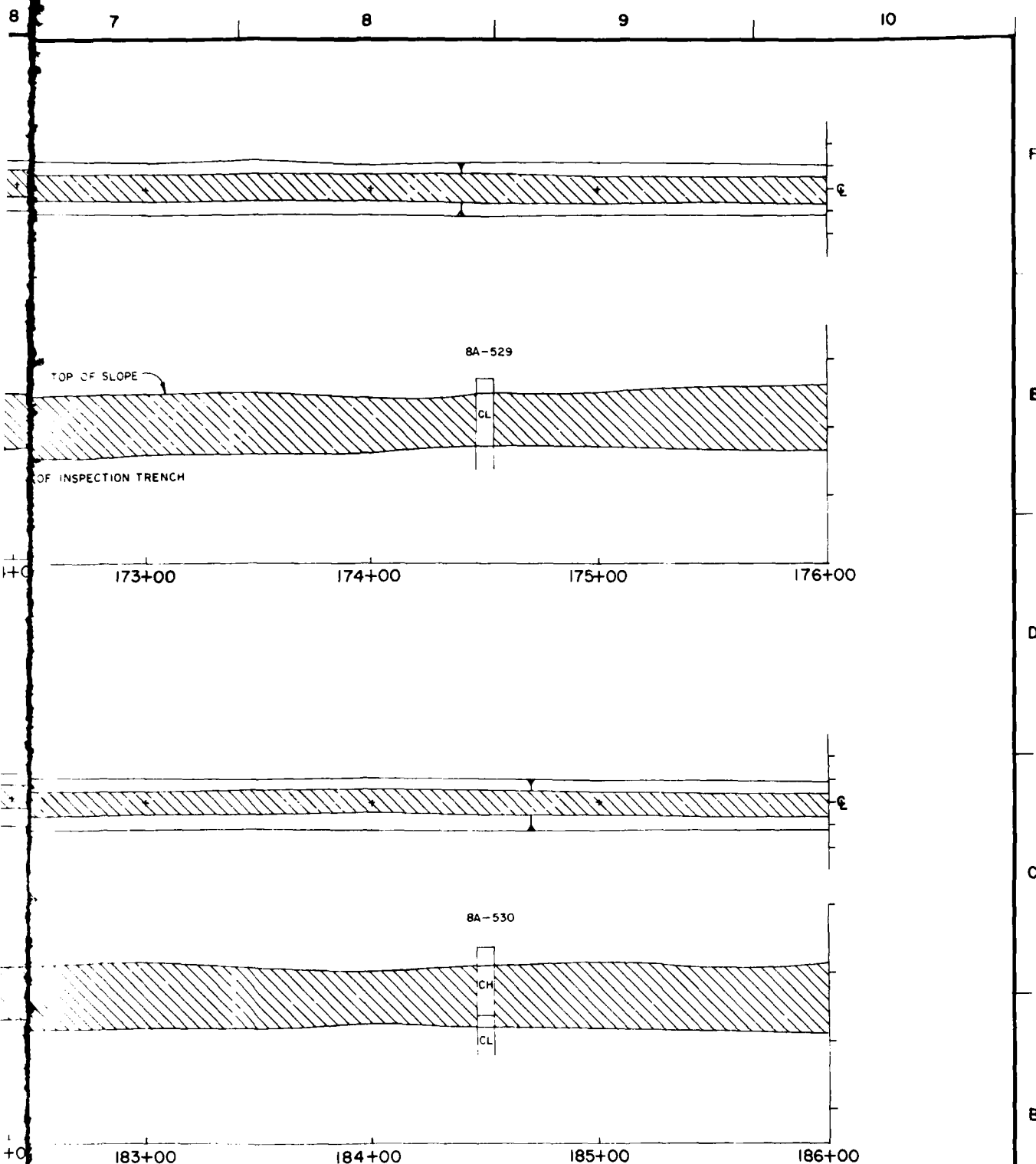
2 FOR DETAILED LOGS OF BORINGS SEE
PLATES 36 THRU 75

4

5

6

7

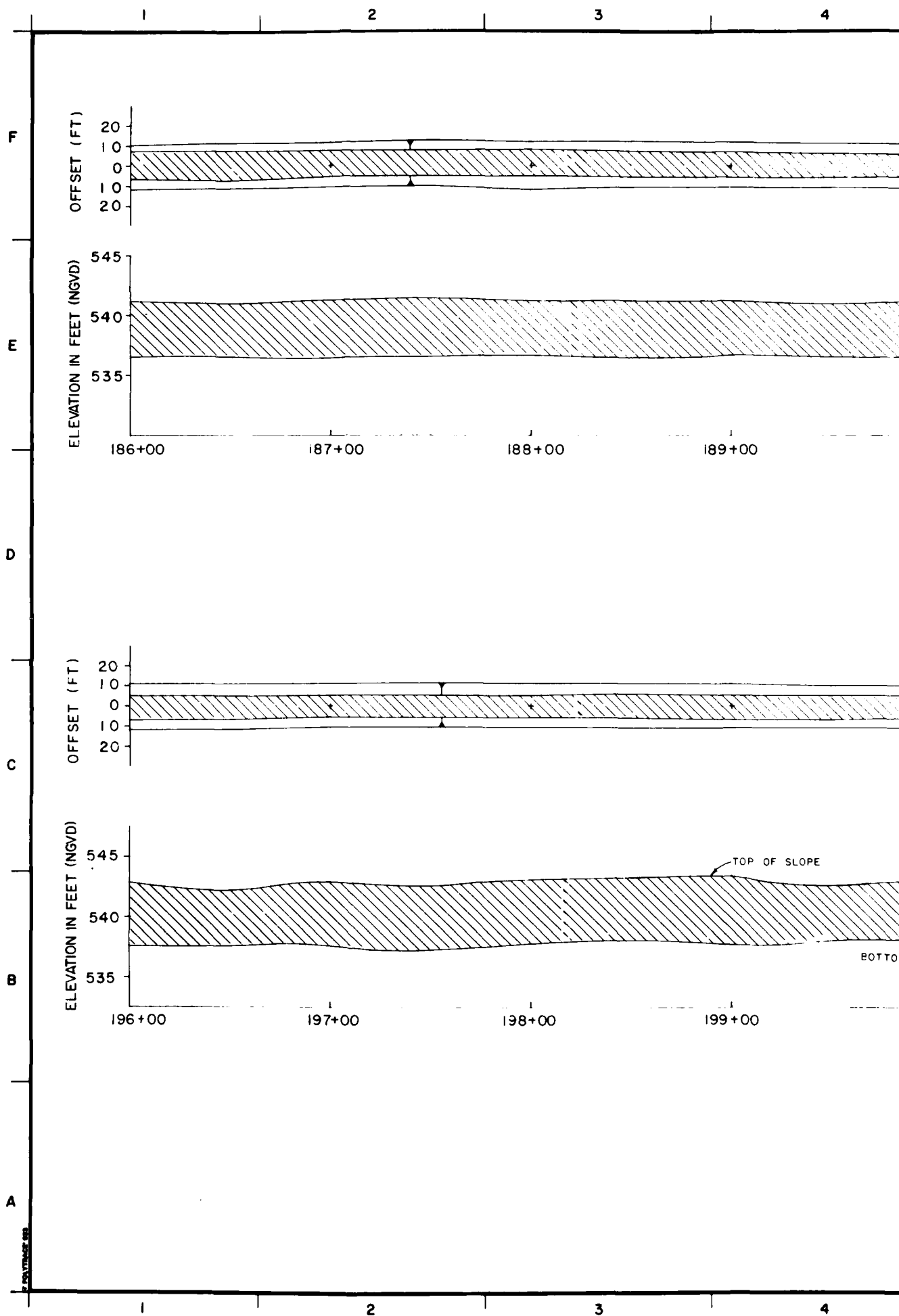


NOTES

- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS SEE PLATES 36 THRU 73

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY J. MERRFIELD	INSPECTION TRENCH		
REVIEWED BY R. BEHM	AS-BUILT PLAN AND PROFILE STATION 166+00 TO 186+00		
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	SEQUENCE NO. 24
	CONTRACT NO.	SHEET NO. OF	
	DRAWING NUMBER		

TO ACCOMPANY FINAL FOUNDATION REPORT



PLAN

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

199+00

190+00

191+00

192+00

193+00

194+00

PROFILESTATIONS IN FEET
(LOOKING UPSTREAM)PLAN

TOP OF SLOPE

BOTTOM OF INSPECTION TRENCH

199+00

200+00

201+00

202+00

203+00

204+00

PROFILESTATIONS IN FEET
(LOOKING UPSTREAM)NOTES

- 1 FOR LEGEND SEE PLATE 14
- 2 FOR DETAILED LOGS OF BORINGS, SEE
PLATES 36 THRU 73

8

9

10

194+00

195+00

196+00

8A-533

CL

204+00

205+00

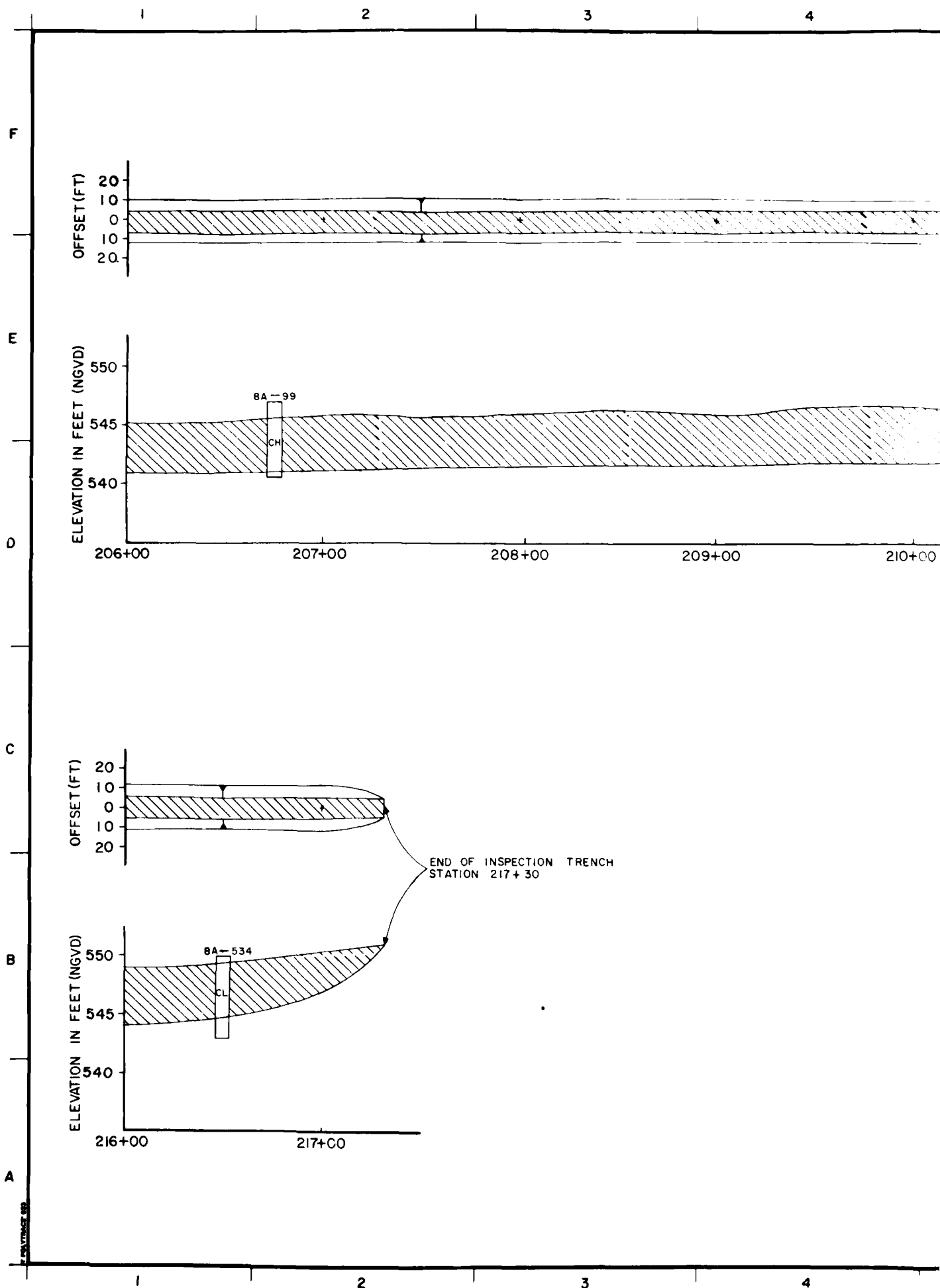
206+00

PLATE 14
 S. OF BORINGS, SEE
 RU 73

DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 186+00 TO 206+00	INVESTIGATION NO.	DATE
DRAWN BY S. WOMACK		CONTRACT NO.	SHEET NO. OF
REVIEWED BY R. BEHM		DRAWING NUMBER	SEQUENCE NO. 25
SUBMITTED BY ROBERT BEHM ENGINEER	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		

8

TO ACCOMPANY FINAL FOUNDATION REPORT



4

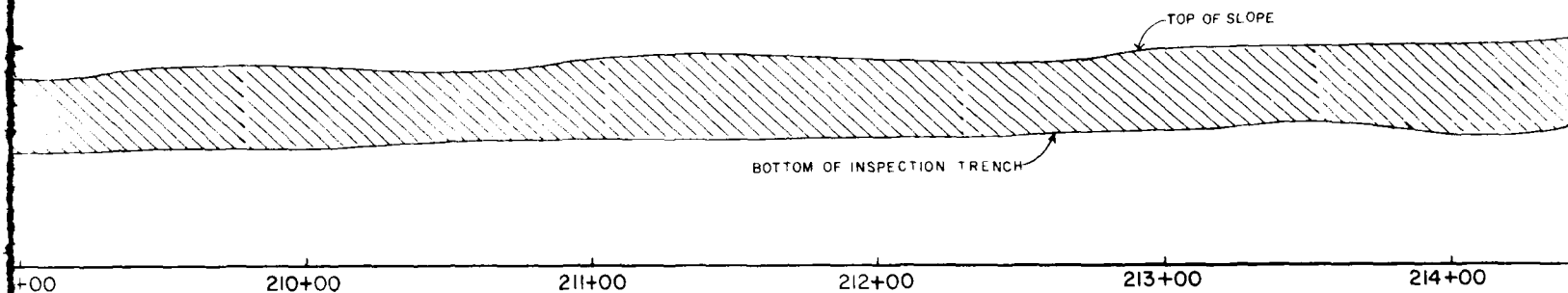
5

6

7

8

PLAN



PROFILE

STATIONS IN FEET
(LOOKING UPSTREAM)

NOTES

1. FOR LEGEND SEE PLATE 14
2. FOR DETAILED LOGS OF BORINGS
SEE PLATES 36 THRU 73

4

5

6

7

8

8

9

10

F

E

D

C

B

214+00

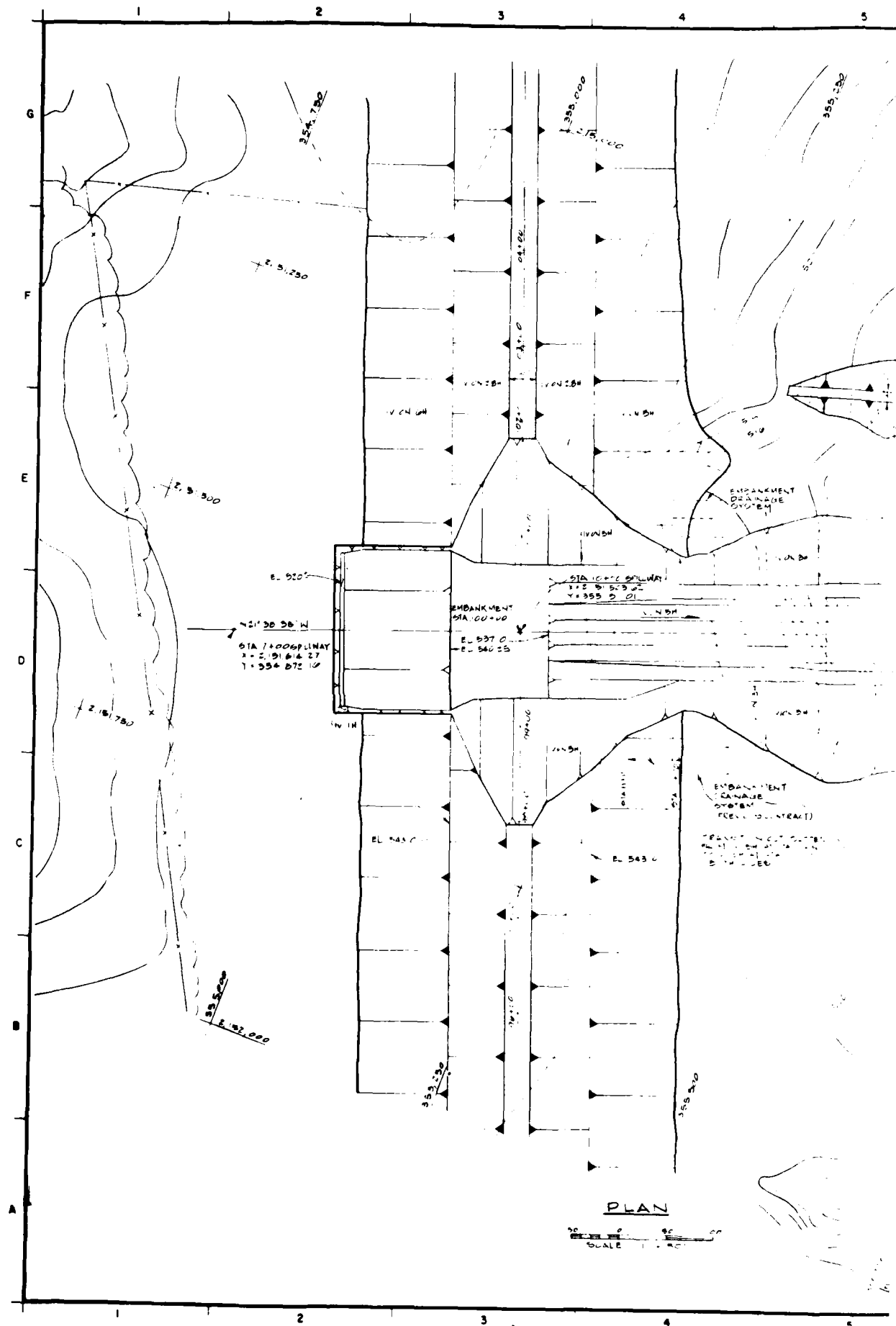
215+00

216+00

REVISION NO.	ACTION	DATE	DESCRIPTION OF REVISION
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY A. MARRS	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY A. MARRS	INSPECTION TRENCH AS-BUILT PLAN AND PROFILE STATION 206+00 TO 217+00		
REVIEWED BY R. BEHM			
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	SEQUENCE NO.
	CONTRACT NO.	DRAWING NUMBER	26

8

TO ACCOMPANY FINAL FOUNDATION REPORT



G

F

E

D

C

B

A

FLOW

US 2227
US 2227
US 2227

APPROACH LAB

SPURWAY BRIDGE

US 2227

MANHOLE

END OF ROAD
SPURWAY TO
RIDGE ROAD
US 2227

MAXIMUM WATER
SURFACE ELEVATION

PROPOSED
PUD - 2227

US 2227
APPROXIMATE
MEDIAN OF PRIMARY APPROX 2227

SECTION THROUGH
PUD - 2227 (SEE 1)

1

2

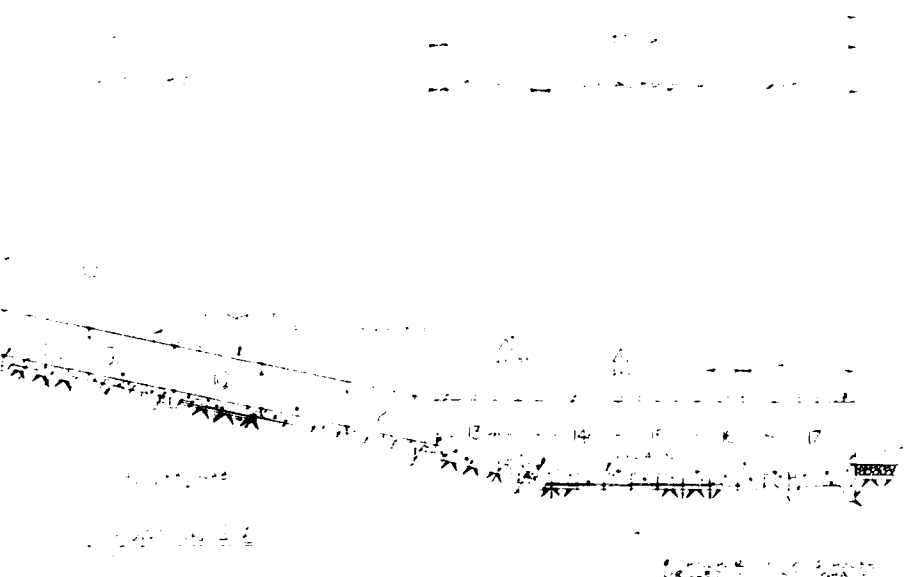
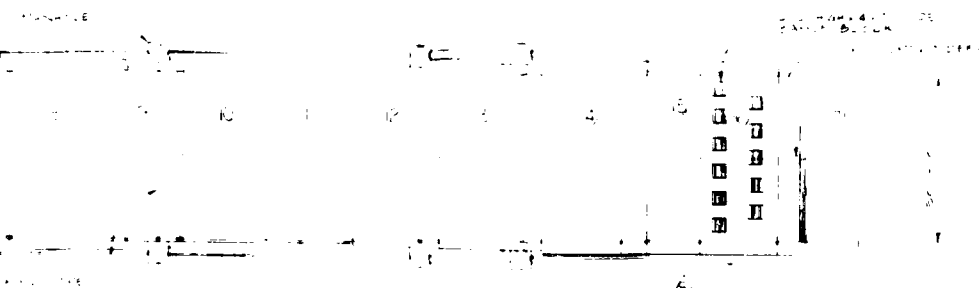
3

4

△

△

5

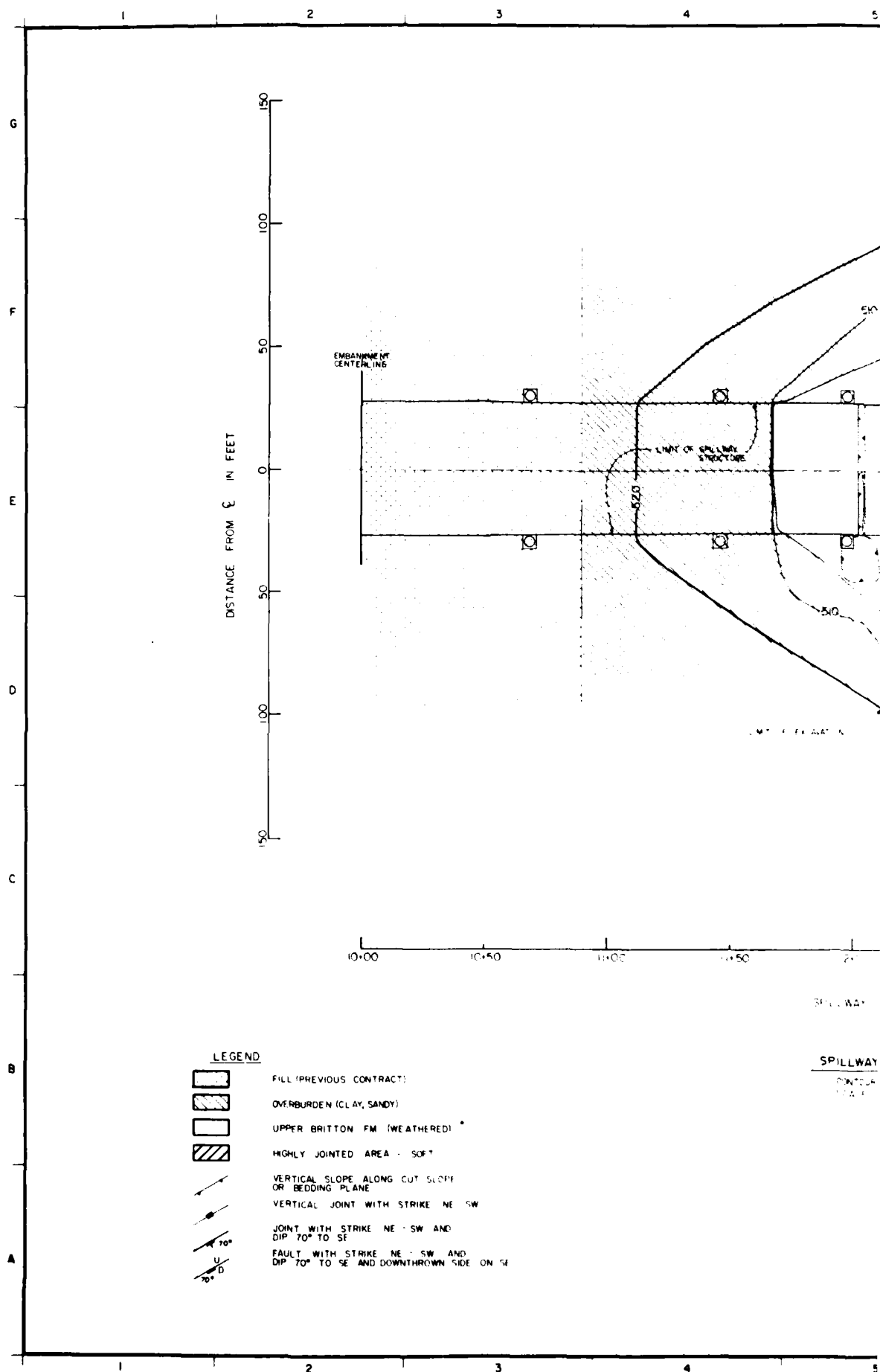


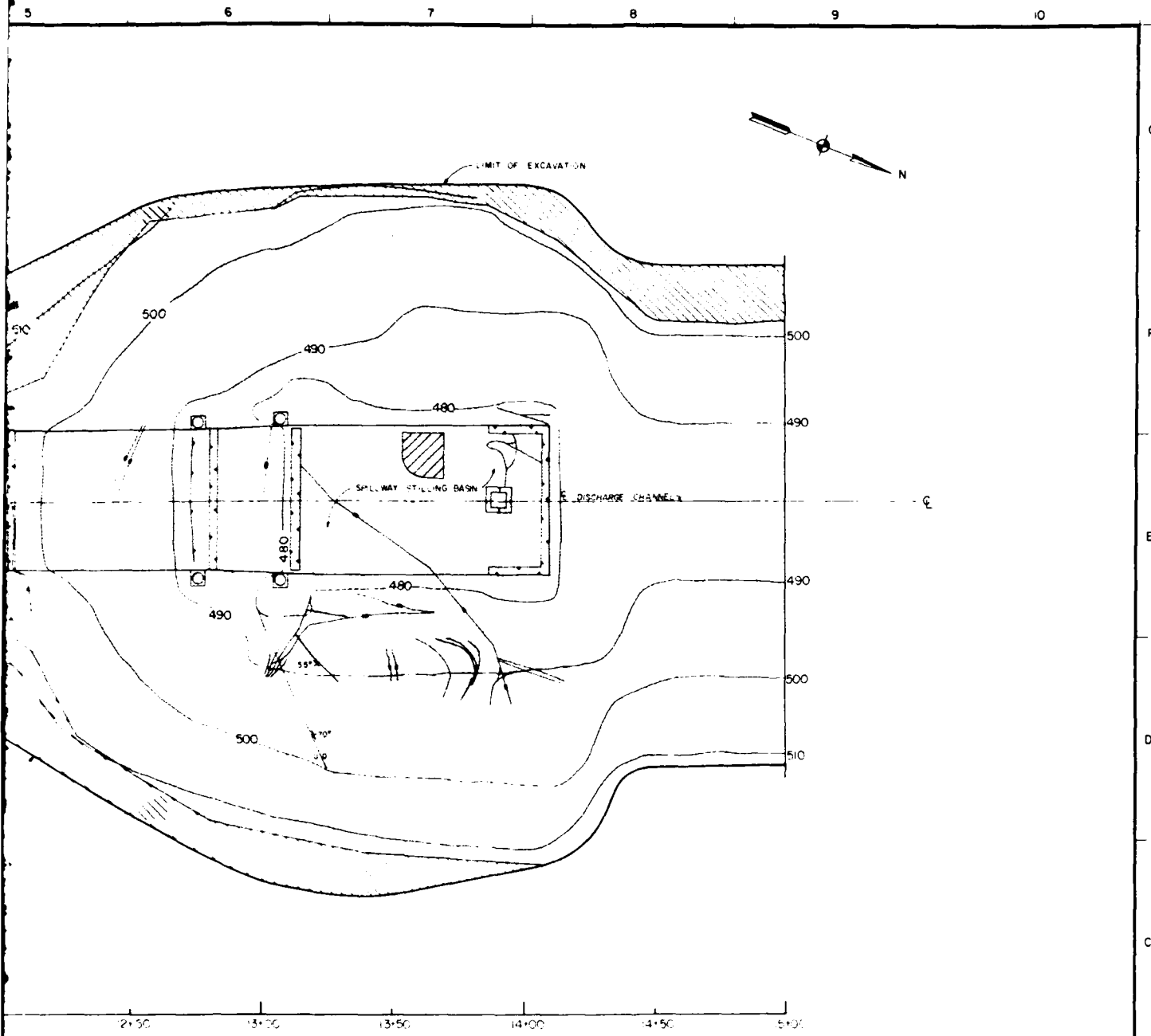
CLASS 1 TEND ON LAP BAR AND EMBANKMENT				
16	17	BAR	LAP LENGTH (INCH)	
			OTHER BAR	TOP BAR
1	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
2	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
3	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4
4	1	1	1	1
	2	2	2	2
	3	3	3	3
	4	4	4	4

- THE BAR ARE TO BE PLACED IN THE EMBANKMENT AS SHOWN IN THE PLAN AND PROFILE VIEWS.
- ALL THE BAR ARE TO BE PLACED IN THE EMBANKMENT AS SHOWN IN THE PLAN AND PROFILE VIEWS.

NOTE: SEE PLAN SECTION MONO FOR NO. 4 AND 5
OFF SHEET 3

U.S. ARMY ENGINEER DISTRICT, FORT WORTH BRIGADE OF ENGINEERS FORT WORTH, TEXAS	
JOE POOL LAKE MOUNTAIN CREEK, TEXAS	
EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
SPILLWAY PLAN & PROFILE	
DRAWN BY CHECKED BY DESIGNED BY APPROVED BY	DATED JULY 1964 DRAWING NUMBER SHEET NO. 28





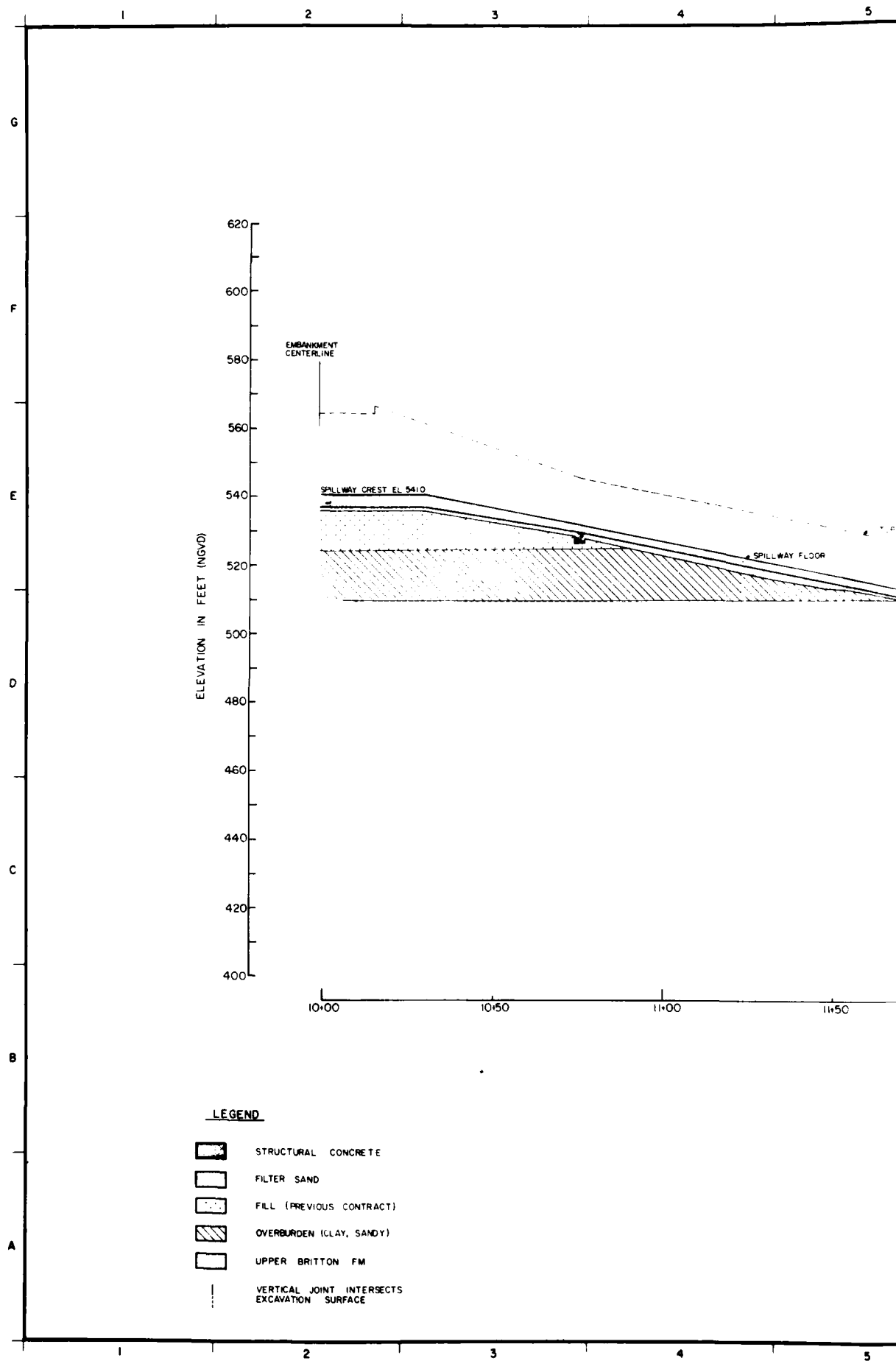
CONTINUOUS IN FEET

SPILLWAY EXCAVATION MAP

CONTOUR INTERVAL 10 FEET

DESIGNED BY A. WARR		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DRAWN BY C. KIRBY		JCE POOL LAKE MOUNTAIN CREEK, TEXAS	
REVIEWED BY R. BEHM			
SUBMITTED BY ROBERT BEHM ENGINEER		CONTR. NO.	DATED
		DRAWING NUMBER	SHEET NO. 29

TO ACCOMPANY FINAL FOUNDATION REPORT



5 6 7 8 9 10

G

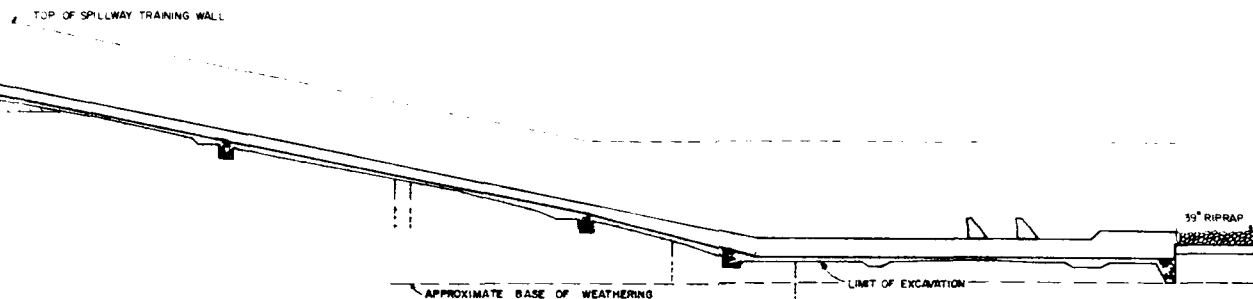
F

E

D

C

B



12+00 12+50 13+00 13+50 14+00 14+50

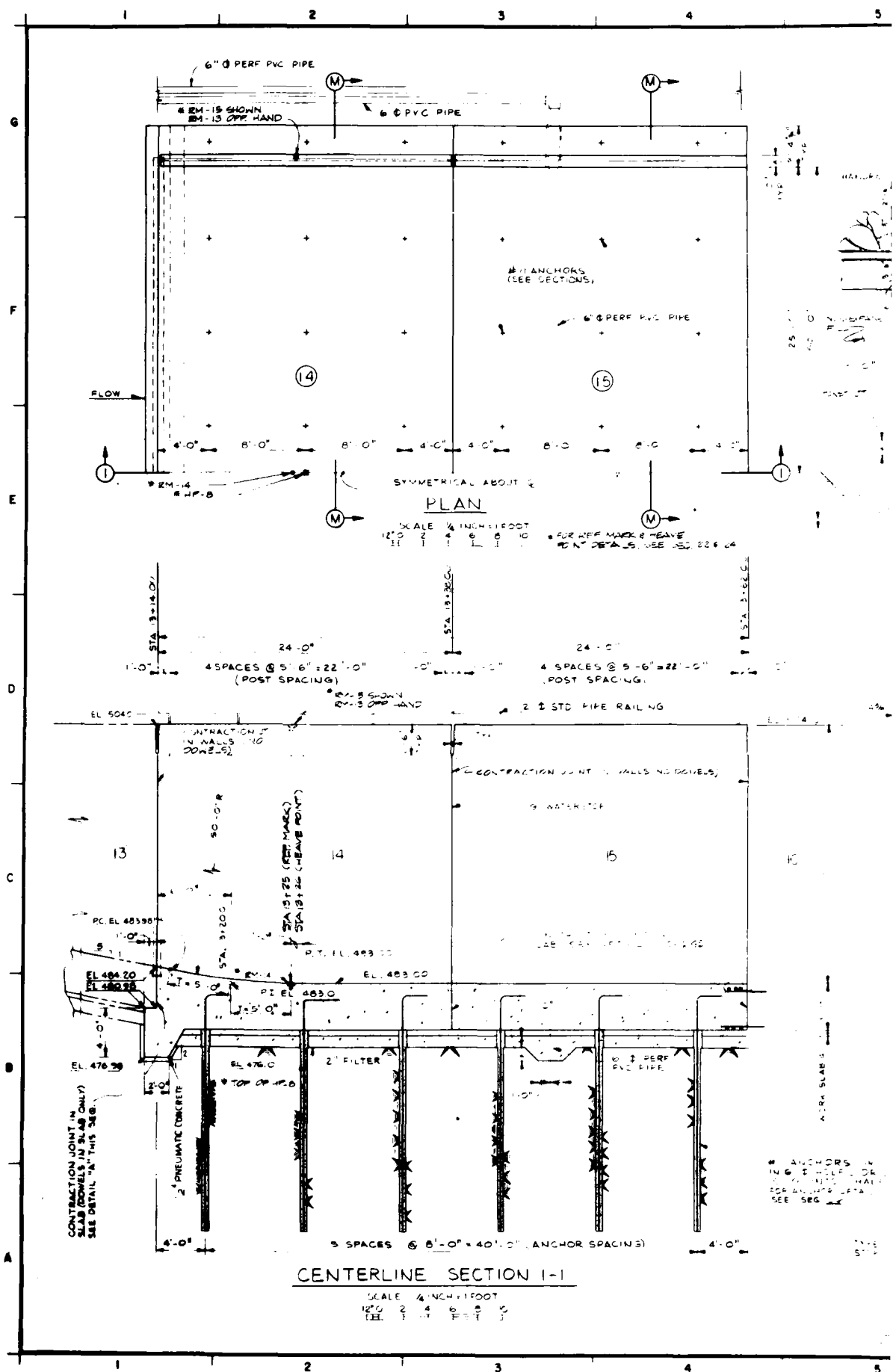
STATIONS IN FEET

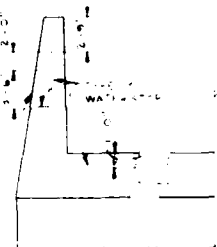
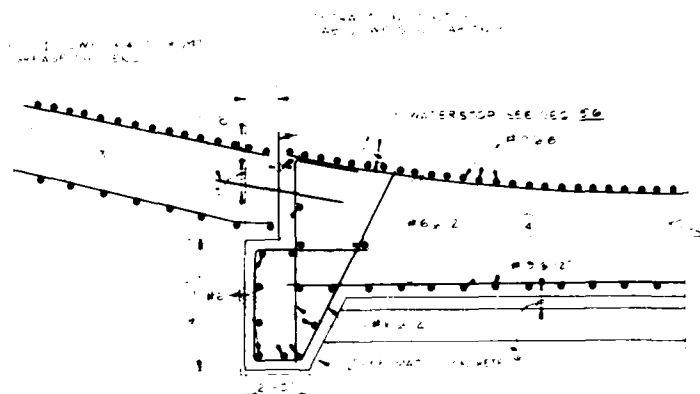
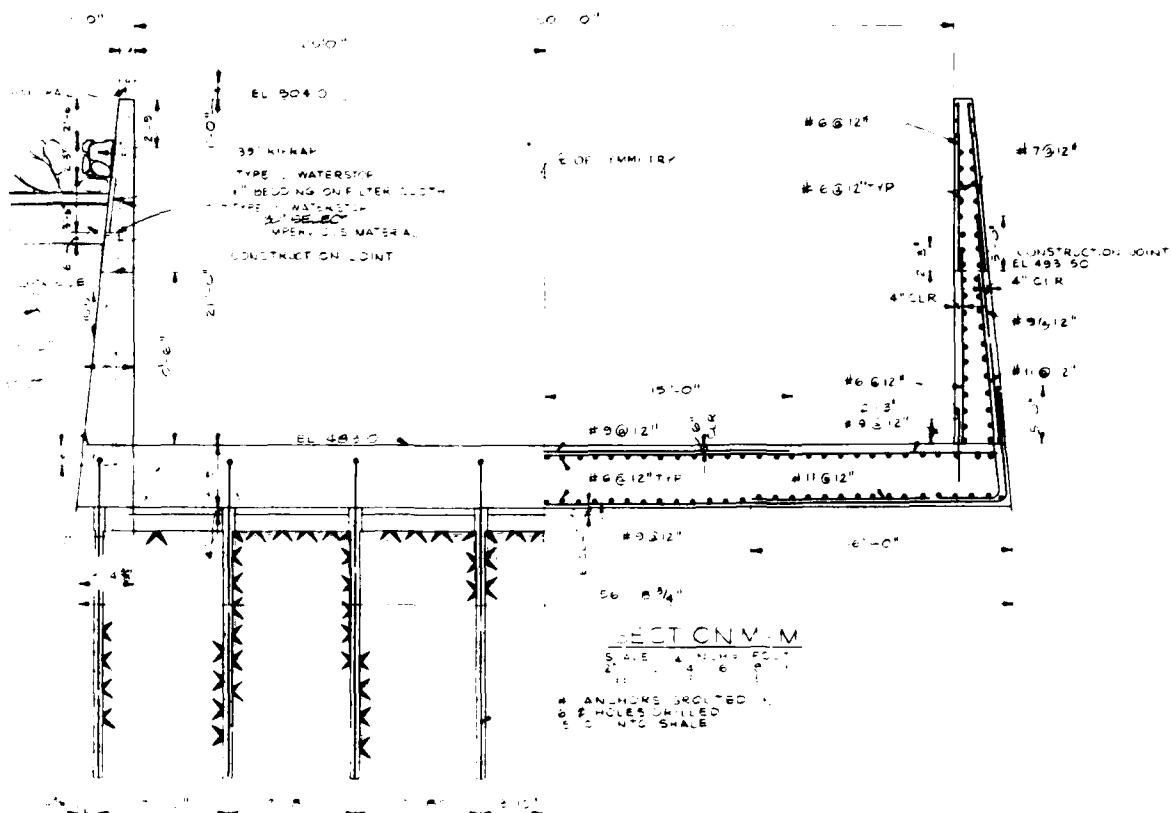
SPILLWAY PROFILE

DESIGNED BY A. MARR		JOE POOL LAKE MOUNTAIN CREEK, TEXAS	
DRAWN BY C. KIRBY		GEOLOGIC PROFILE	
REVIEWED BY R. BEHM		SPILLWAY CENTERLINE (AS-BUILT)	
SUBMITTED BY ROBERT BEHM ENGINEER		SOL NO	DATED
		CONTR NO	
		DRAWING NUMBER	SHEET NO 30

TO ACCOMPANY FINAL FOUNDATION REPORT

5 6 7 8



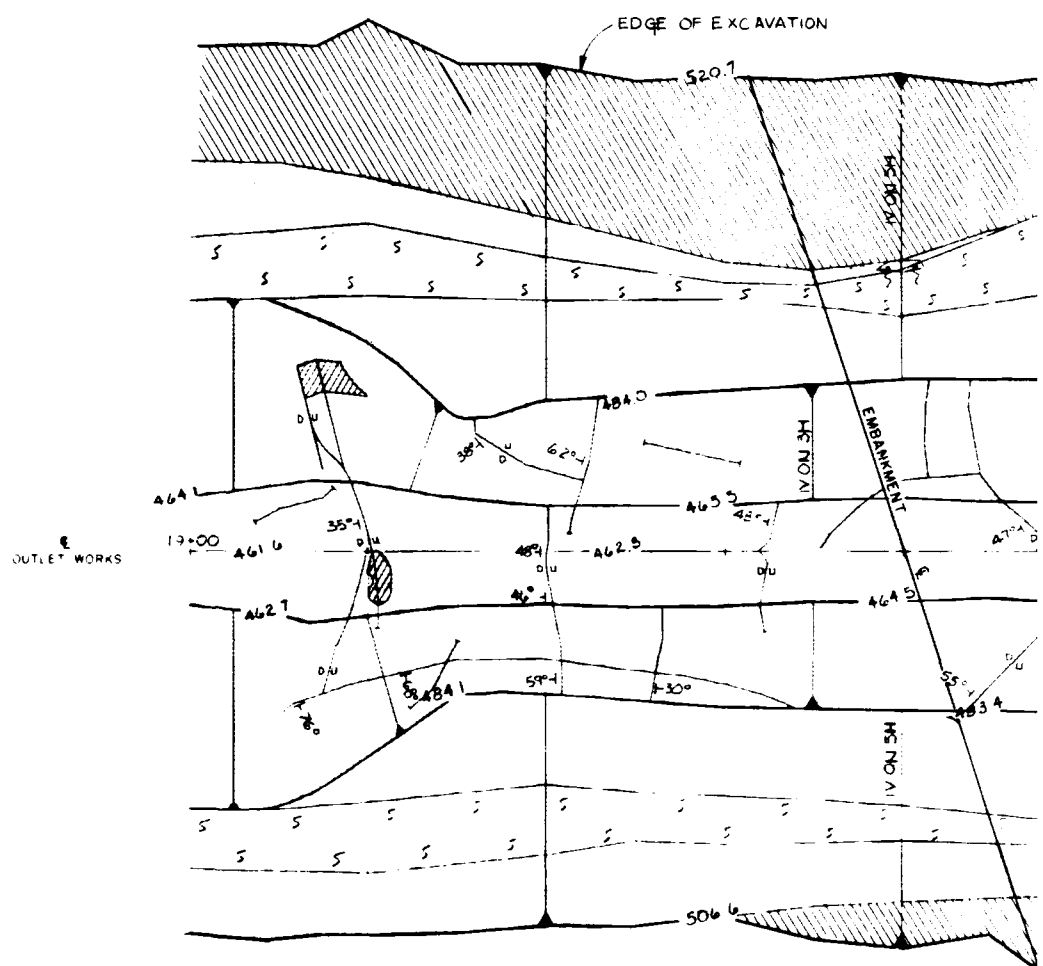
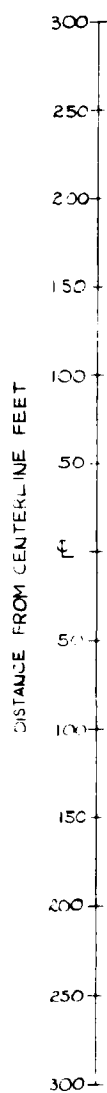


NOTES
FOR GENERAL NOTES SEE SHEET 30

DESIGNED BY: J. J. JORDAN		CHECKED BY: J. J. JORDAN	
DRAWN BY: J. J. JORDAN		REVIEWED BY: J. J. JORDAN	
APPROVED BY: J. J. JORDAN		DATE: JULY 1968	
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
JOCE POOL LAKE MOUNTAIN VIEW, TEXAS			
SPILLWAY MONOLITHS NO. 14 AND 15 PLAN AND SECTIONS			
DRAWING NUMBER		SHEET NO. 31	

8 TO ACCOMPANY FINAL FOUNDATION REPORT









A



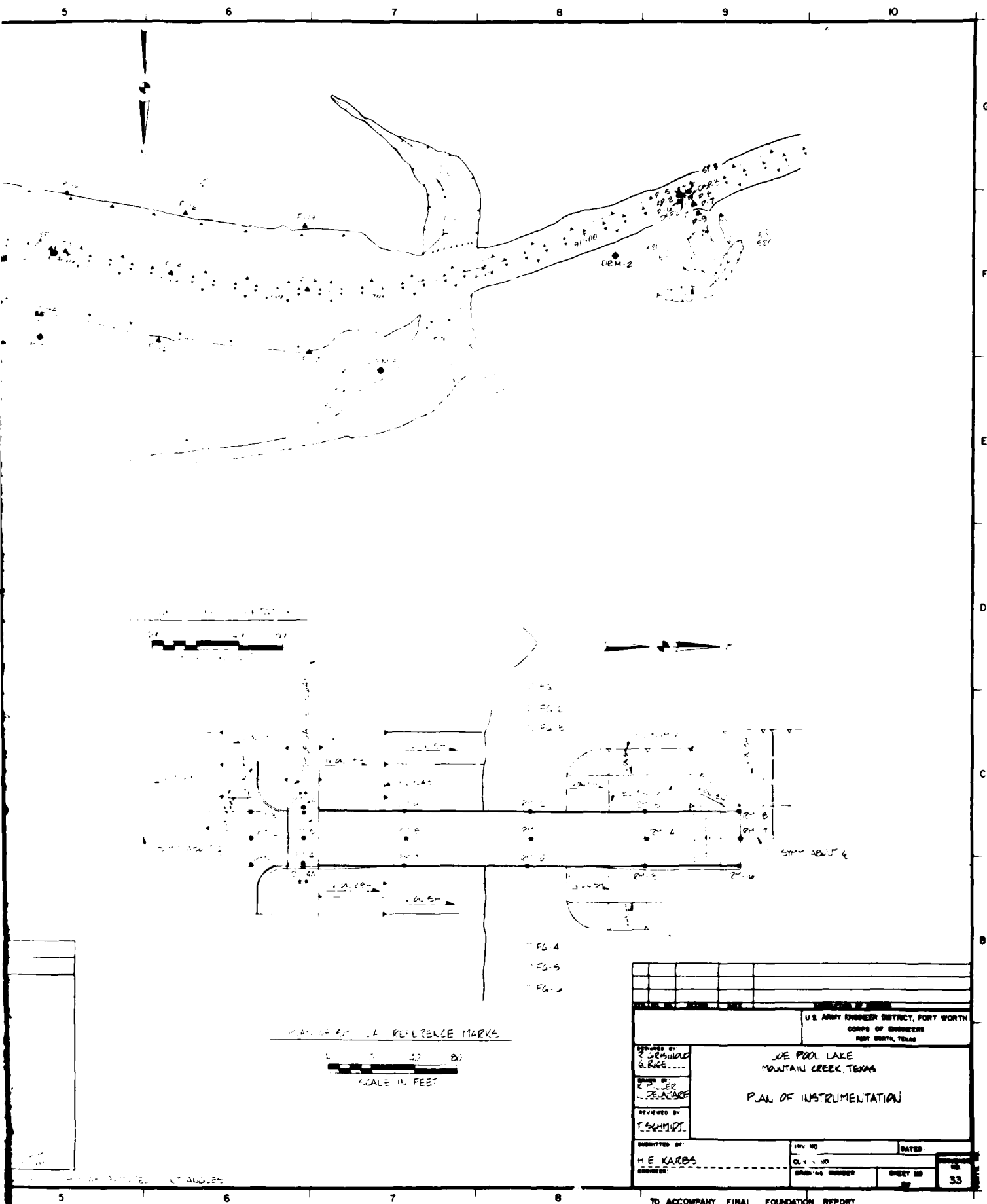
350
+ 300
+ 250
+ 200
+ 150
+ 100
+ 50
+ 0
- 50
- 100
- 150
- 200
- 250
- 300

DISTANCE FROM CENTERLINE FEET

LEGEND

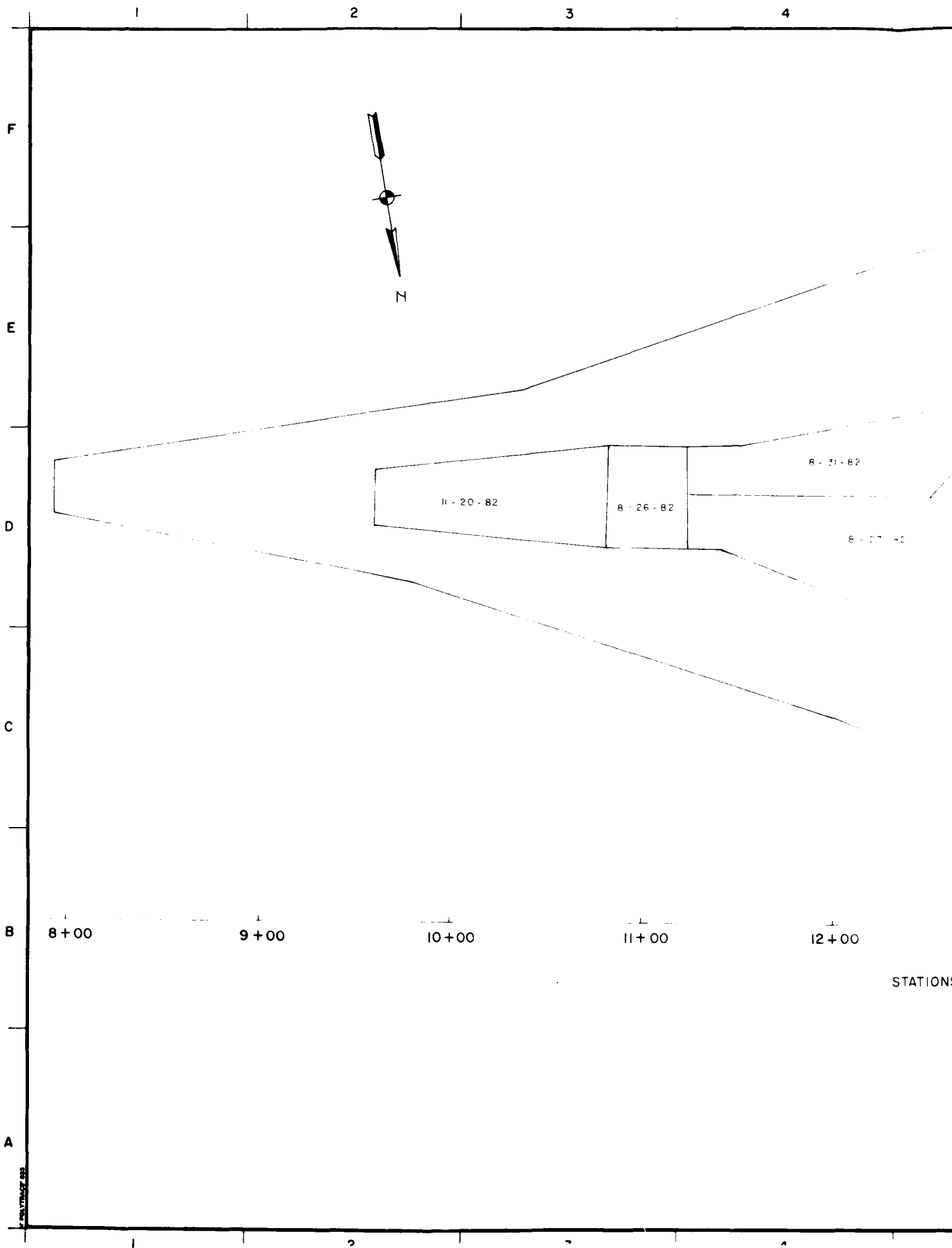
-  CLAY
 SAND & GRAVEL
 UPPER BRITTON FM, WEATHERED
 UPPER BRITTON FM, UNWEATHERED
 LOWER BRITTON FM
 FAULT OR JOINT EXPOSED ON SURFACE. STRIKE NW-SE DIP 45° NE DOWNTOWN SIDE ON NE SIDE OF FAULT.
 ZONE OF JOINTED OR BROKEN PRIMARY
 SEEPAGE AREA

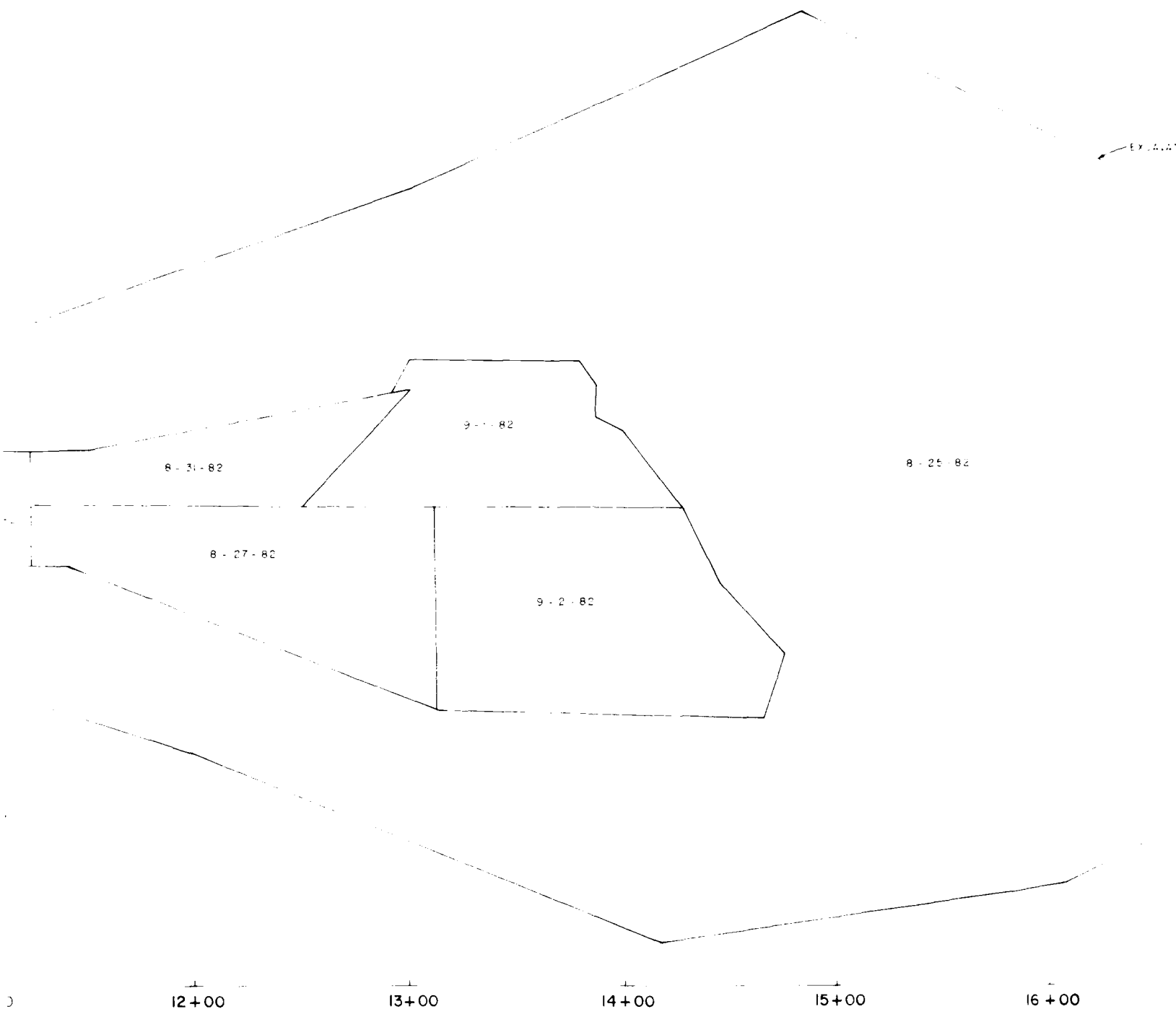
SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY A. MARK	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY M. CASTELLON	OUTLET WORKS		
CHECKED BY R. BEHM	AS-BUILT FOUNDATION EXCAVATION PLAN STATION 19+00 THRU STATION 29+00		
SUBMITTED BY ROBERT BEHM ENGINEER	INV NO.	DATED	PLATE 32
	CONTR NO.	SHEET NO. OF	



DESIGNED BY R. G. WARD R. R. G.		U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
CHECKED BY R. P. LEE R. P. LEE		DE POOL LAKE MOUNTAIN CREEK, TEXAS PLAN OF INSTRUMENTATION	
REVIEWED BY T. SUMMERS			
SUBMITTED BY H. E. KAROS		DATE OCT 1 1950	BY 33
ENGINEER		DRAWING NUMBER	SHEET NO.

TO ACCOMPANY FINAL FOUNDATION REPORT





STATIONS IN FEET

NOTES

1. UNWEATHERED SHALE SURFACES MAPPED AND APPROVED IMMEDIATELY SUBSEQUENT TO EXCAVATION TO FINAL GRADE, ALL OTHER SURFACES MAPPED ON 8-25-82 AND APPROVED BY CONSTRUCTION REPRESENTATIVE PRIOR TO BACKFILL.
2. A DETAILED MAP OF THE EXCAVATION IS PRESENTED ON PLATE 15.

F

E

D

C

B

16 + 00

17 + 00

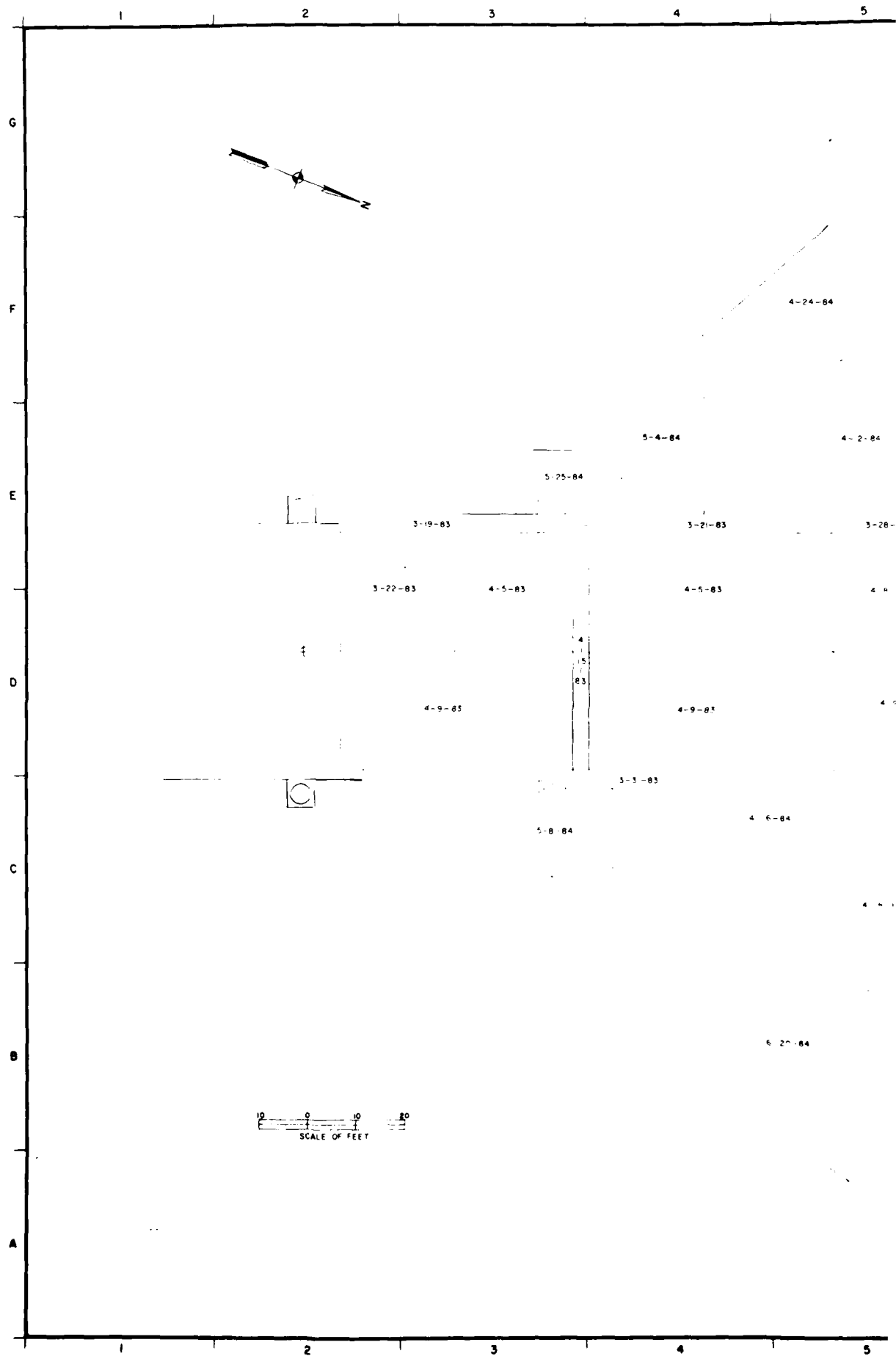
18 + 00

19 + 00

DESIGNED AND APPROVED
FOR CONSTRUCTION TO FINAL GRADE,
8-25-82 AND APPROVED
FOR BACKFILL.

THIS IS PRESENTED ON

SYMBOL NO.	ACTION	DATE	DESCRIPTION OF REVISION
U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY A. MARR	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY C. DRYSDALE	DEEP INSPECTION TRENCH		
REVIEWED BY R. BEHM	RECORD OF FOUNDATION APPROVAL		
SUBMITTED BY ROBERT BEHM ENGINEER	INVITATION NO.	DATE	SEQUENCE NO.
	CONTRACT NO.		34
	DRAWING NUMBER	SHEET NO. OF	



5 6 7 8 9 10

G

F

E

D

C

B

6-20-84

4-25-84

4-18-84

2-14-84

4-4-84

2-6-84

2-7-84

4-2-84

11-18-83

12-10-83

12-12-83

2-14-84

3-28-83

3-29-83

3-29-83

3-29-83

4-6-83

4-8-83

4-8-83

4-12-83

4

5

83

4

15

83

4-10-83

4-15-83

4

22

83

4-9-83

4-9-83

4-1-83

4-6-83

C1

3-8-84

3-7-84

2-2-84

4-17-84

3-3-84

3-4-84

4-8-84

4-17-84

4-23-84

4-25-84

6-20-84

DESIGNED BY A. MARR		JOE POOL LAKE MOUNTAIN CREEK, TEXAS	
CHECKED BY J. VANDER J. VANDER		SPILLWAY	
REVIEWED BY S. BENN		RECORD OF FOUNDATION APPROVAL	
QUANTITY BY ROBERT BENN		SOL. NO.	DATED
ENGINEER		CONTR. NO.	DRAWING NUMBER
		SHEET NO.	35

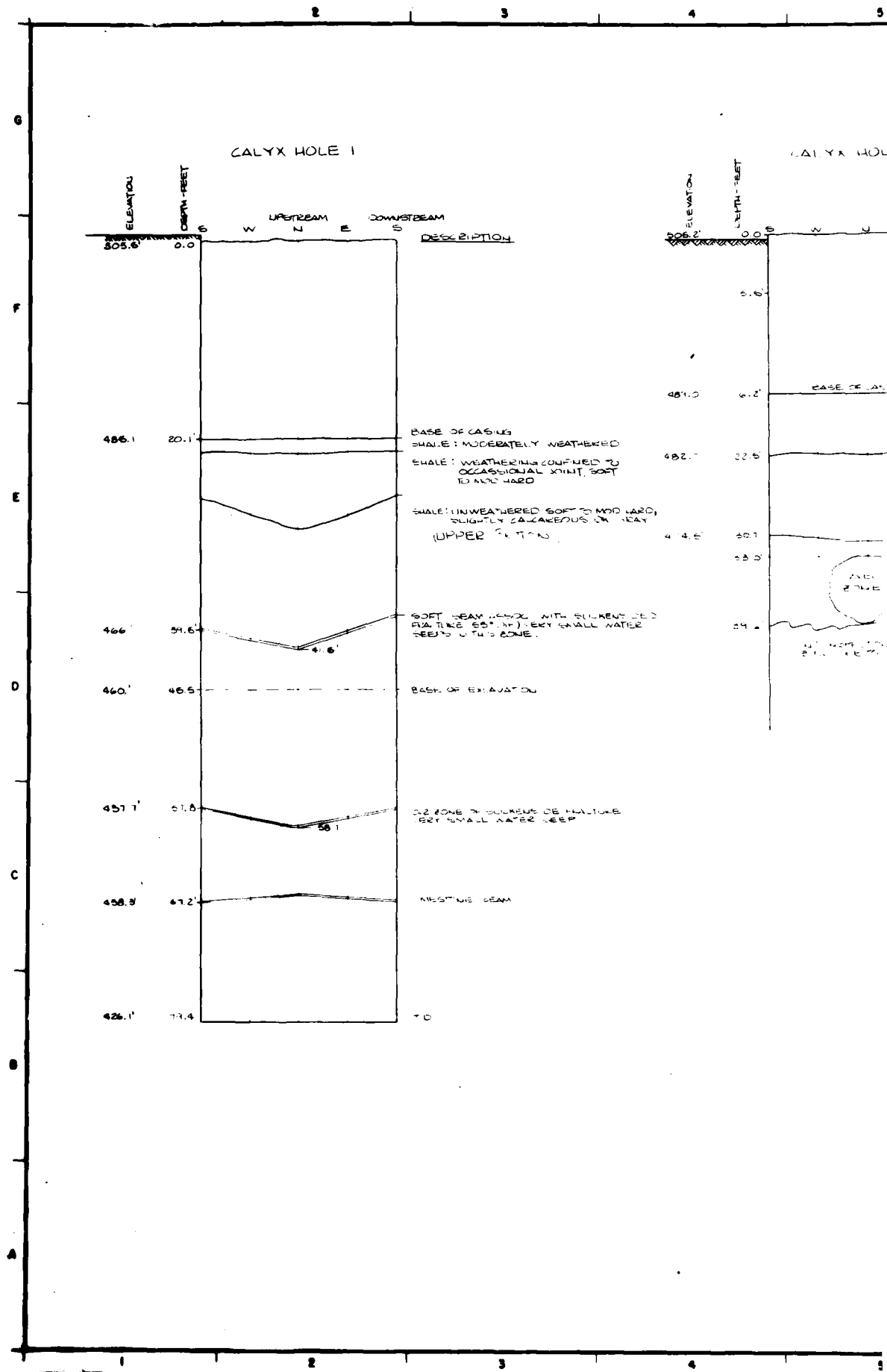
TO ACCOMPANY FINAL FOUNDATION REPORT

5

6

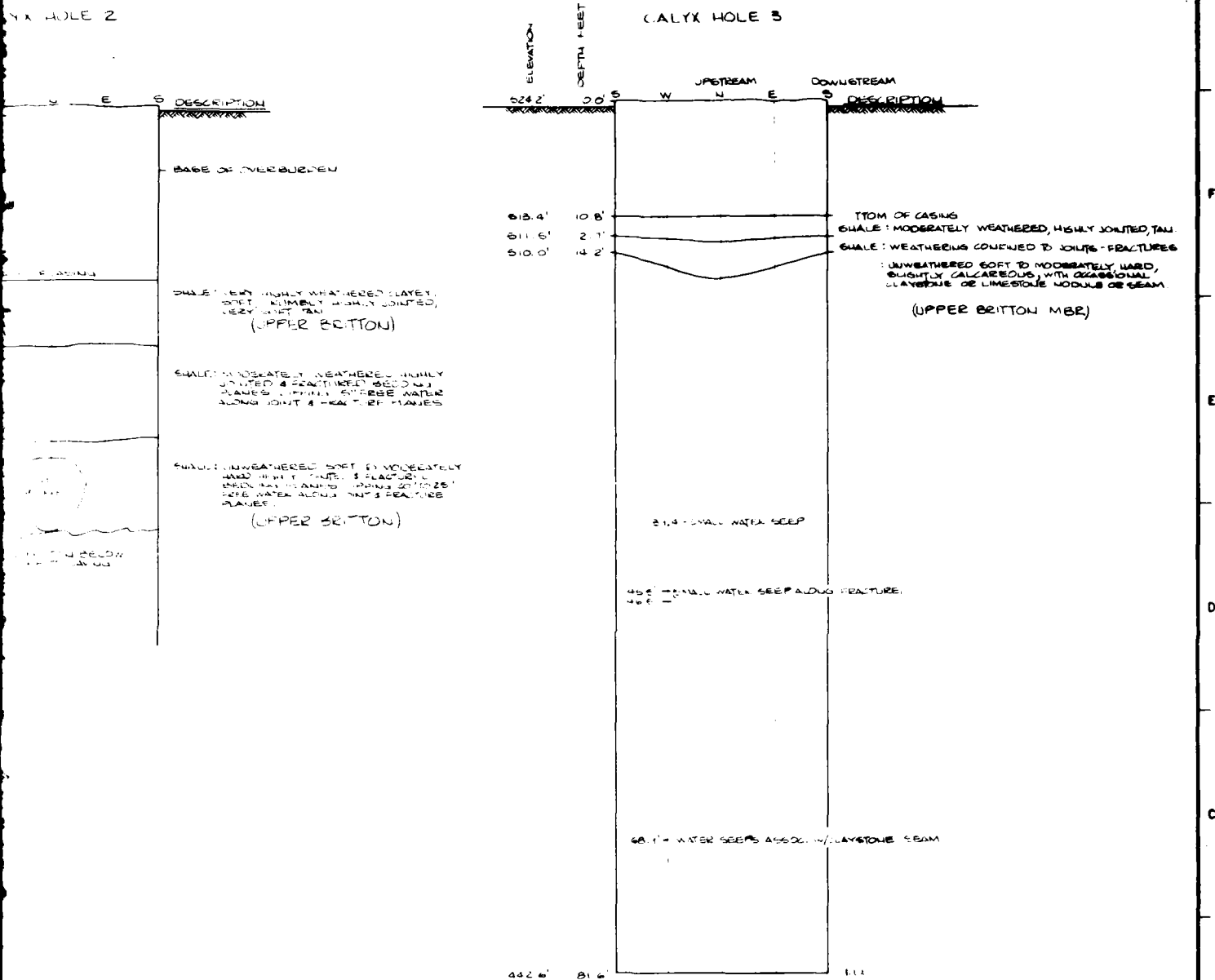
7

8



YALX HOLE 2

CALYX HOLE 3



FOR YALX HOLE 2 SEE SHEET 35 & 4

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY J. BEHN	JOE POOL LAKE MOUNTAIN CREEK, TEXAS
DRAWN BY H. R. LAM	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVIEWED BY R. E. B.	LOGS OF BORINGS (CALYX HOLE 1, 2 & 3)
SUBMITTED BY ROBERT BEHN	INV. NO. (DAEN 68-21-2-0073)
	DATED JULY 1961
	DRAWING NUMBER
	SHEET NO. 36

8 TO ACCOMPANY FINAL FOUNDATION REPORT

BORING LOG	
DATE	1961 JUL 18
TIME	0800
LOCATION	JOE POOL LAKE, MOUNTAIN VIEW, TEXAS
PROJECT	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
NO.	60C-38
DEPTH	10.00
SOIL TYPE	CLAY
WATER LEVEL	10.00
REMARKS	...

BORING LOG	
DATE	1961 JUL 18
TIME	0800
LOCATION	JOE POOL LAKE, MOUNTAIN VIEW, TEXAS
PROJECT	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
NO.	60C-39
DEPTH	10.00
SOIL TYPE	CLAY
WATER LEVEL	10.00
REMARKS	...

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY W. B. BELL	JOE POOL LAKE MOUNTAIN VIEW, TEXAS
SPAWN BY W. B. BELL	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVIEWED BY W. B. BELL	LOGS OF BORINGS 60C-38 AND 60C-39
SUBMITTED BY ROBERT BELL	DATE JULY 1961
SEQUENCE NO. 38	DRAWING NUMBER

ACCOMPANY FINAL FOUNDATION REPORT

[The page contains faint, illegible markings and bleed-through from the reverse side.]

12.1.

100
 101
 102
 103
 104
 105
 106
 107
 108
 109
 110
 111
 112
 113
 114
 115
 116
 117
 118
 119
 120
 121
 122
 123
 124
 125
 126
 127
 128
 129
 130
 131
 132
 133
 134
 135
 136
 137
 138
 139
 140
 141
 142
 143
 144
 145
 146
 147
 148
 149
 150
 151
 152
 153
 154
 155
 156
 157
 158
 159
 160
 161
 162
 163
 164
 165
 166
 167
 168
 169
 170
 171
 172
 173
 174
 175
 176
 177
 178
 179
 180
 181
 182
 183
 184
 185
 186
 187
 188
 189
 190
 191
 192
 193
 194
 195
 196
 197
 198
 199
 200
 201
 202
 203
 204
 205
 206
 207
 208
 209
 210
 211
 212
 213
 214
 215
 216
 217
 218
 219
 220
 221
 222
 223
 224
 225
 226
 227
 228
 229
 230
 231
 232
 233
 234
 235
 236
 237
 238
 239
 240
 241
 242
 243
 244
 245
 246
 247
 248
 249
 250
 251
 252
 253
 254
 255
 256
 257
 258
 259
 260
 261
 262
 263
 264
 265
 266
 267
 268
 269
 270
 271
 272
 273
 274
 275
 276
 277
 278
 279
 280
 281
 282
 283
 284
 285
 286
 287
 288
 289
 290
 291
 292
 293
 294
 295
 296
 297
 298
 299
 300
 301
 302
 303
 304
 305
 306
 307
 308
 309
 310
 311
 312
 313
 314
 315
 316
 317
 318
 319
 320
 321
 322
 323
 324
 325
 326
 327
 328
 329
 330
 331
 332
 333
 334
 335
 336
 337
 338
 339
 340
 341
 342
 343
 344
 345
 346
 347
 348
 349
 350
 351
 352
 353
 354
 355
 356
 357
 358
 359
 360
 361
 362
 363
 364
 365
 366
 367
 368
 369
 370
 371
 372
 373
 374
 375
 376
 377
 378
 379
 380
 381
 382
 383
 384
 385
 386
 387
 388
 389
 390
 391
 392
 393
 394
 395
 396
 397
 398
 399
 400
 401
 402
 403
 404
 405
 406
 407
 408
 409
 410
 411
 412
 413
 414
 415
 416
 417
 418
 419
 420
 421
 422
 423
 424
 425
 426
 427
 428
 429
 430
 431
 432
 433
 434
 435
 436
 437
 438
 439
 440
 441
 442
 443
 444
 445
 446
 447
 448
 449
 450
 451
 452
 453
 454
 455
 456
 457
 458
 459
 460
 461
 462
 463
 464
 465
 466
 467
 468
 469
 470
 471
 472
 473
 474
 475
 476
 477
 478
 479
 480
 481
 482
 483
 484
 485
 486
 487
 488
 489
 490
 491
 492
 493
 494
 495
 496
 497
 498
 499
 500
 501
 502
 503
 504
 505
 506
 507
 508
 509
 510
 511
 512
 513
 514
 515
 516
 517
 518
 519
 520
 521
 522
 523
 524
 525
 526
 527
 528
 529
 530
 531
 532
 533
 534
 535
 536
 537
 538
 539
 540
 541
 542
 543
 544
 545
 546
 547
 548
 549
 550
 551
 552
 553
 554
 555
 556
 557
 558
 559
 560
 561
 562
 563
 564
 565
 566
 567
 568
 569
 570
 571
 572
 573
 574
 575
 576
 577
 578
 579
 580
 581
 582
 583
 584
 585
 586
 587
 588
 589
 590
 591
 592
 593
 594
 595
 596
 597
 598
 599
 600
 601
 602
 603
 604
 605
 606
 607
 608
 609
 610
 611

TO ACCOMPANY FINAL FOUNDATION REPORT

Hole No. 8441 42

DEPTH LOG	DESCRIPTION	DEPTH
LAKEVIEW 1341 SITE	1341 WPTN 21.7	5
1. LOCATION: SW 1/4 Sec. 10, T. 10 N., R. 10 E., S. 10 E.	1341 WPTN 21.7	5
2. DATE: 10/1/54	1341 WPTN 21.7	5
3. NAME: DE KEMPEN	1341 WPTN 21.7	5
4. TYPE: 1341 WPTN 21.7	1341 WPTN 21.7	5
5. 1341 WPTN 21.7	1341 WPTN 21.7	5
6. 1341 WPTN 21.7	1341 WPTN 21.7	5
7. 1341 WPTN 21.7	1341 WPTN 21.7	5
8. 1341 WPTN 21.7	1341 WPTN 21.7	5
9. 1341 WPTN 21.7	1341 WPTN 21.7	5
10. 1341 WPTN 21.7	1341 WPTN 21.7	5
11. 1341 WPTN 21.7	1341 WPTN 21.7	5
12. 1341 WPTN 21.7	1341 WPTN 21.7	5
13. 1341 WPTN 21.7	1341 WPTN 21.7	5
14. 1341 WPTN 21.7	1341 WPTN 21.7	5
15. 1341 WPTN 21.7	1341 WPTN 21.7	5
16. 1341 WPTN 21.7	1341 WPTN 21.7	5
17. 1341 WPTN 21.7	1341 WPTN 21.7	5
18. 1341 WPTN 21.7	1341 WPTN 21.7	5
19. 1341 WPTN 21.7	1341 WPTN 21.7	5
20. 1341 WPTN 21.7	1341 WPTN 21.7	5
21. 1341 WPTN 21.7	1341 WPTN 21.7	5
22. 1341 WPTN 21.7	1341 WPTN 21.7	5
23. 1341 WPTN 21.7	1341 WPTN 21.7	5
24. 1341 WPTN 21.7	1341 WPTN 21.7	5
25. 1341 WPTN 21.7	1341 WPTN 21.7	5
26. 1341 WPTN 21.7	1341 WPTN 21.7	5
27. 1341 WPTN 21.7	1341 WPTN 21.7	5
28. 1341 WPTN 21.7	1341 WPTN 21.7	5
29. 1341 WPTN 21.7	1341 WPTN 21.7	5
30. 1341 WPTN 21.7	1341 WPTN 21.7	5
31. 1341 WPTN 21.7	1341 WPTN 21.7	5
32. 1341 WPTN 21.7	1341 WPTN 21.7	5
33. 1341 WPTN 21.7	1341 WPTN 21.7	5
34. 1341 WPTN 21.7	1341 WPTN 21.7	5
35. 1341 WPTN 21.7	1341 WPTN 21.7	5
36. 1341 WPTN 21.7	1341 WPTN 21.7	5
37. 1341 WPTN 21.7	1341 WPTN 21.7	5
38. 1341 WPTN 21.7	1341 WPTN 21.7	5
39. 1341 WPTN 21.7	1341 WPTN 21.7	5
40. 1341 WPTN 21.7	1341 WPTN 21.7	5

Hole No. 8441 42

DEPTH LOG	DESCRIPTION	DEPTH
LAKEVIEW 1341 SITE	1341 WPTN 21.7	5
1. LOCATION: SW 1/4 Sec. 10, T. 10 N., R. 10 E., S. 10 E.	1341 WPTN 21.7	5
2. DATE: 10/1/54	1341 WPTN 21.7	5
3. NAME: DE KEMPEN	1341 WPTN 21.7	5
4. TYPE: 1341 WPTN 21.7	1341 WPTN 21.7	5
5. 1341 WPTN 21.7	1341 WPTN 21.7	5
6. 1341 WPTN 21.7	1341 WPTN 21.7	5
7. 1341 WPTN 21.7	1341 WPTN 21.7	5
8. 1341 WPTN 21.7	1341 WPTN 21.7	5
9. 1341 WPTN 21.7	1341 WPTN 21.7	5
10. 1341 WPTN 21.7	1341 WPTN 21.7	5
11. 1341 WPTN 21.7	1341 WPTN 21.7	5
12. 1341 WPTN 21.7	1341 WPTN 21.7	5
13. 1341 WPTN 21.7	1341 WPTN 21.7	5
14. 1341 WPTN 21.7	1341 WPTN 21.7	5
15. 1341 WPTN 21.7	1341 WPTN 21.7	5
16. 1341 WPTN 21.7	1341 WPTN 21.7	5
17. 1341 WPTN 21.7	1341 WPTN 21.7	5
18. 1341 WPTN 21.7	1341 WPTN 21.7	5
19. 1341 WPTN 21.7	1341 WPTN 21.7	5
20. 1341 WPTN 21.7	1341 WPTN 21.7	5
21. 1341 WPTN 21.7	1341 WPTN 21.7	5
22. 1341 WPTN 21.7	1341 WPTN 21.7	5
23. 1341 WPTN 21.7	1341 WPTN 21.7	5
24. 1341 WPTN 21.7	1341 WPTN 21.7	5
25. 1341 WPTN 21.7	1341 WPTN 21.7	5
26. 1341 WPTN 21.7	1341 WPTN 21.7	5
27. 1341 WPTN 21.7	1341 WPTN 21.7	5
28. 1341 WPTN 21.7	1341 WPTN 21.7	5
29. 1341 WPTN 21.7	1341 WPTN 21.7	5
30. 1341 WPTN 21.7	1341 WPTN 21.7	5
31. 1341 WPTN 21.7	1341 WPTN 21.7	5
32. 1341 WPTN 21.7	1341 WPTN 21.7	5
33. 1341 WPTN 21.7	1341 WPTN 21.7	5
34. 1341 WPTN 21.7	1341 WPTN 21.7	5
35. 1341 WPTN 21.7	1341 WPTN 21.7	5
36. 1341 WPTN 21.7	1341 WPTN 21.7	5
37. 1341 WPTN 21.7	1341 WPTN 21.7	5
38. 1341 WPTN 21.7	1341 WPTN 21.7	5
39. 1341 WPTN 21.7	1341 WPTN 21.7	5
40. 1341 WPTN 21.7	1341 WPTN 21.7	5

Sheet No. 846C-42

DRILLING LOG		Sheet No. 846C-42	
1	1.00	1.00	1.00
2	2.00	2.00	2.00
3	3.00	3.00	3.00
4	4.00	4.00	4.00
5	5.00	5.00	5.00
6	6.00	6.00	6.00
7	7.00	7.00	7.00
8	8.00	8.00	8.00
9	9.00	9.00	9.00
10	10.00	10.00	10.00
11	11.00	11.00	11.00
12	12.00	12.00	12.00
13	13.00	13.00	13.00
14	14.00	14.00	14.00
15	15.00	15.00	15.00
16	16.00	16.00	16.00
17	17.00	17.00	17.00
18	18.00	18.00	18.00
19	19.00	19.00	19.00
20	20.00	20.00	20.00
21	21.00	21.00	21.00
22	22.00	22.00	22.00
23	23.00	23.00	23.00
24	24.00	24.00	24.00
25	25.00	25.00	25.00
26	26.00	26.00	26.00
27	27.00	27.00	27.00
28	28.00	28.00	28.00
29	29.00	29.00	29.00
30	30.00	30.00	30.00
31	31.00	31.00	31.00
32	32.00	32.00	32.00
33	33.00	33.00	33.00
34	34.00	34.00	34.00
35	35.00	35.00	35.00
36	36.00	36.00	36.00
37	37.00	37.00	37.00
38	38.00	38.00	38.00
39	39.00	39.00	39.00
40	40.00	40.00	40.00

DRILLING LOG		Sheet No. 846C-43	
1	1.00	1.00	1.00
2	2.00	2.00	2.00
3	3.00	3.00	3.00
4	4.00	4.00	4.00
5	5.00	5.00	5.00
6	6.00	6.00	6.00
7	7.00	7.00	7.00
8	8.00	8.00	8.00
9	9.00	9.00	9.00
10	10.00	10.00	10.00
11	11.00	11.00	11.00
12	12.00	12.00	12.00
13	13.00	13.00	13.00
14	14.00	14.00	14.00
15	15.00	15.00	15.00
16	16.00	16.00	16.00
17	17.00	17.00	17.00
18	18.00	18.00	18.00
19	19.00	19.00	19.00
20	20.00	20.00	20.00
21	21.00	21.00	21.00
22	22.00	22.00	22.00
23	23.00	23.00	23.00
24	24.00	24.00	24.00
25	25.00	25.00	25.00
26	26.00	26.00	26.00
27	27.00	27.00	27.00
28	28.00	28.00	28.00
29	29.00	29.00	29.00
30	30.00	30.00	30.00
31	31.00	31.00	31.00
32	32.00	32.00	32.00
33	33.00	33.00	33.00
34	34.00	34.00	34.00
35	35.00	35.00	35.00
36	36.00	36.00	36.00
37	37.00	37.00	37.00
38	38.00	38.00	38.00
39	39.00	39.00	39.00
40	40.00	40.00	40.00

US ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY J. P. HUNT	JOE POOL LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY J. L. HUNT	EMBANKMENT, SPILLWAY, AND OUTLET WORKS		
REVIEWED BY J. L. HUNT	LOGS OF BORINGS 846C-42 AND 846C-43		
SUBMITTED BY ROBERT BOHM	INV NO. DACH 6-1-81-B-0093	DATED MAY 1951	SEQUENCE NO. 41
DRAWING NUMBER	SHEET NO. 41		

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible][illegible]

Map No. 846C-44

Map No. 846C-45

Map No. 846C-45

BORING LOG		SOUTHWESTERN		FORT WORTH DIST	
LAKEVIEW DAM SITE		BAGC 45		BAGC 45	
1	0.0-0.5	CLAY, MOD SD, FINE R/S LMS	10' PULVER TO 370		
2	0.5-1.0	WET SILE TO VAST MED	NOIRING, 10'		
3	1.0-1.5	CLAY, MOD GR, MOD SD LMS	W. 1000 87' 59.2		
4	1.5-2.0	WET SILE BRN	BAILED HOLE TO 215		
5	2.0-2.5	CLAY SL SD LMS V. MOD	ON 6 JUNE 1969		
6	2.5-3.0	WET SILE BRN	WILE LET OPEN WRM		
7	3.0-3.5	CLAY, MOD SD, W/TH LENSES	WATER LEVEL AT		
8	3.5-4.0	OF CLAYEY GRAVEL LMS WET	ON 7 JUNE 1969		
9	4.0-4.5	WET SILE BRN			
10	4.5-5.0	CLAY, MOD SD, W/TH LMS			
11	5.0-5.5	OF CLAYEY GRAVEL LMS WET			
12	5.5-6.0	WET SILE BRN			
13	6.0-6.5	CLAY, MOD SD, W/TH LMS			
14	6.5-7.0	OF CLAYEY GRAVEL LMS WET			
15	7.0-7.5	WET SILE BRN			
16	7.5-8.0	CLAY, MOD SD, W/TH LMS			
17	8.0-8.5	OF CLAYEY GRAVEL LMS WET			
18	8.5-9.0	WET SILE BRN			
19	9.0-9.5	CLAY, MOD SD, W/TH LMS			
20	9.5-10.0	OF CLAYEY GRAVEL LMS WET			
21	10.0-10.5	WET SILE BRN			
22	10.5-11.0	CLAY, MOD SD, W/TH LMS			
23	11.0-11.5	OF CLAYEY GRAVEL LMS WET			
24	11.5-12.0	WET SILE BRN			
25	12.0-12.5	CLAY, MOD SD, W/TH LMS			
26	12.5-13.0	OF CLAYEY GRAVEL LMS WET			
27	13.0-13.5	WET SILE BRN			
28	13.5-14.0	CLAY, MOD SD, W/TH LMS			
29	14.0-14.5	OF CLAYEY GRAVEL LMS WET			
30	14.5-15.0	WET SILE BRN			
31	15.0-15.5	CLAY, MOD SD, W/TH LMS			
32	15.5-16.0	OF CLAYEY GRAVEL LMS WET			
33	16.0-16.5	WET SILE BRN			
34	16.5-17.0	CLAY, MOD SD, W/TH LMS			
35	17.0-17.5	OF CLAYEY GRAVEL LMS WET			
36	17.5-18.0	WET SILE BRN			
37	18.0-18.5	CLAY, MOD SD, W/TH LMS			
38	18.5-19.0	OF CLAYEY GRAVEL LMS WET			
39	19.0-19.5	WET SILE BRN			
40	19.5-20.0	CLAY, MOD SD, W/TH LMS			
41	20.0-20.5	OF CLAYEY GRAVEL LMS WET			
42	20.5-21.0	WET SILE BRN			
43	21.0-21.5	CLAY, MOD SD, W/TH LMS			
44	21.5-22.0	OF CLAYEY GRAVEL LMS WET			
45	22.0-22.5	WET SILE BRN			
46	22.5-23.0	CLAY, MOD SD, W/TH LMS			
47	23.0-23.5	OF CLAYEY GRAVEL LMS WET			
48	23.5-24.0	WET SILE BRN			
49	24.0-24.5	CLAY, MOD SD, W/TH LMS			
50	24.5-25.0	OF CLAYEY GRAVEL LMS WET			
51	25.0-25.5	WET SILE BRN			
52	25.5-26.0	CLAY, MOD SD, W/TH LMS			
53	26.0-26.5	OF CLAYEY GRAVEL LMS WET			
54	26.5-27.0	WET SILE BRN			
55	27.0-27.5	CLAY, MOD SD, W/TH LMS			
56	27.5-28.0	OF CLAYEY GRAVEL LMS WET			
57	28.0-28.5	WET SILE BRN			
58	28.5-29.0	CLAY, MOD SD, W/TH LMS			
59	29.0-29.5	OF CLAYEY GRAVEL LMS WET			
60	29.5-30.0	WET SILE BRN			

BORING LOG		SW		FWD	
LAKEVIEW D5		BAGC 45		BAGC 45	
1	0.0-0.5	CLAY, MOD SD, FINE R/S LMS	10' PULVER TO 370		
2	0.5-1.0	WET SILE TO VAST MED	NOIRING, 10'		
3	1.0-1.5	CLAY, MOD GR, MOD SD LMS	W. 1000 87' 59.2		
4	1.5-2.0	WET SILE BRN	BAILED HOLE TO 215		
5	2.0-2.5	CLAY SL SD LMS V. MOD	ON 6 JUNE 1969		
6	2.5-3.0	WET SILE BRN	WILE LET OPEN WRM		
7	3.0-3.5	CLAY, MOD SD, W/TH LENSES	WATER LEVEL AT		
8	3.5-4.0	OF CLAYEY GRAVEL LMS WET	ON 7 JUNE 1969		
9	4.0-4.5	WET SILE BRN			
10	4.5-5.0	CLAY, MOD SD, W/TH LMS			
11	5.0-5.5	OF CLAYEY GRAVEL LMS WET			
12	5.5-6.0	WET SILE BRN			
13	6.0-6.5	CLAY, MOD SD, W/TH LMS			
14	6.5-7.0	OF CLAYEY GRAVEL LMS WET			
15	7.0-7.5	WET SILE BRN			
16	7.5-8.0	CLAY, MOD SD, W/TH LMS			
17	8.0-8.5	OF CLAYEY GRAVEL LMS WET			
18	8.5-9.0	WET SILE BRN			
19	9.0-9.5	CLAY, MOD SD, W/TH LMS			
20	9.5-10.0	OF CLAYEY GRAVEL LMS WET			
21	10.0-10.5	WET SILE BRN			
22	10.5-11.0	CLAY, MOD SD, W/TH LMS			
23	11.0-11.5	OF CLAYEY GRAVEL LMS WET			
24	11.5-12.0	WET SILE BRN			
25	12.0-12.5	CLAY, MOD SD, W/TH LMS			
26	12.5-13.0	OF CLAYEY GRAVEL LMS WET			
27	13.0-13.5	WET SILE BRN			
28	13.5-14.0	CLAY, MOD SD, W/TH LMS			
29	14.0-14.5	OF CLAYEY GRAVEL LMS WET			
30	14.5-15.0	WET SILE BRN			
31	15.0-15.5	CLAY, MOD SD, W/TH LMS			
32	15.5-16.0	OF CLAYEY GRAVEL LMS WET			
33	16.0-16.5	WET SILE BRN			
34	16.5-17.0	CLAY, MOD SD, W/TH LMS			
35	17.0-17.5	OF CLAYEY GRAVEL LMS WET			
36	17.5-18.0	WET SILE BRN			
37	18.0-18.5	CLAY, MOD SD, W/TH LMS			
38	18.5-19.0	OF CLAYEY GRAVEL LMS WET			
39	19.0-19.5	WET SILE BRN			
40	19.5-20.0	CLAY, MOD SD, W/TH LMS			
41	20.0-20.5	OF CLAYEY GRAVEL LMS WET			
42	20.5-21.0	WET SILE BRN			
43	21.0-21.5	CLAY, MOD SD, W/TH LMS			
44	21.5-22.0	OF CLAYEY GRAVEL LMS WET			
45	22.0-22.5	WET SILE BRN			
46	22.5-23.0	CLAY, MOD SD, W/TH LMS			
47	23.0-23.5	OF CLAYEY GRAVEL LMS WET			
48	23.5-24.0	WET SILE BRN			
49	24.0-24.5	CLAY, MOD SD, W/TH LMS			
50	24.5-25.0	OF CLAYEY GRAVEL LMS WET			
51	25.0-25.5	WET SILE BRN			
52	25.5-26.0	CLAY, MOD SD, W/TH LMS			
53	26.0-26.5	OF CLAYEY GRAVEL LMS WET			
54	26.5-27.0	WET SILE BRN			
55	27.0-27.5	CLAY, MOD SD, W/TH LMS			
56	27.5-28.0	OF CLAYEY GRAVEL LMS WET			
57	28.0-28.5	WET SILE BRN			
58	28.5-29.0	CLAY, MOD SD, W/TH LMS			
59	29.0-29.5	OF CLAYEY GRAVEL LMS WET			
60	29.5-30.0	WET SILE BRN			

FOR INFORMATION OF BORING, SEE LOG 4

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY H. B. L. U.	JOE POOL LAKE MOUNTAIN CREEK, TEXAS
DRAWN BY H. B. L. U.	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVIEWED BY H. B. L. U.	LOGS OF BORINGS 846C-44 AND 846C-45
SUBMITTED BY K. A. F. BEHM	DATE JULY 1961
INSTRUMENT NO. JULY 1961	SHEET NO. 42

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible][illegible]

45

3

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

45

3

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

BORING LOG 8A6C 47 CONTINUED ON REQ 46

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY R. E. W.	JOE POOL LAKE MOUNTAIN CREEK, TEXAS
DRAWN BY H. L. R.	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVIEWED BY R. E. W.	LOGS OF BORINGS 8A6C-46 AND 8A6C-47
SUBMITTED BY ROBERT BEHN	IRVING NO. AC 125 B. S. 2045
DATED 1955	SHEET NO. 43

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible]

RECEIVED BY U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		RECEIVED BY U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY R. P. M.	USE POOL LAKE MOUNTAIN CREEK, TEXAS		
CHECKED BY J. L. R.	EMBANKMENT, SPILLWAY, AND OUTLET WORKS		
REVISION BY R. P. M.	LOGS OF BORINGS 6A6C-50 AND 8A6C-52		
SUBMITTED BY ROBERT P. M.	NEW DATED DRAWING NUMBER	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	SHEET NO. OF 44

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible]

1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782

TO ACCOMPANY FINAL FOUNDATION REPORT

Field No. 54

Page 5

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

Field No. 55

Page 6

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

100

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY W. J. BROWN	DATE JUL 1900
PROJECT EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
LOGS OF BORINGS EDC 54 AND BAC 55	
DRAWN BY W. J. BROWN	DATE JUL 1900
DRAWING NUMBER	SHEET NO. 46

1. GLO...
 2. ...
 3. ...
 4. ...
 5. ...
 6. ...
 7. ...
 8. ...
 9. ...
 10. ...
 11. ...
 12. ...
 13. ...
 14. ...
 15. ...
 16. ...
 17. ...
 18. ...
 19. ...
 20. ...
 21. ...
 22. ...
 23. ...
 24. ...
 25. ...
 26. ...
 27. ...
 28. ...
 29. ...
 30. ...
 31. ...
 32. ...
 33. ...
 34. ...
 35. ...
 36. ...
 37. ...
 38. ...
 39. ...
 40. ...
 41. ...
 42. ...
 43. ...
 44. ...
 45. ...
 46. ...
 47. ...
 48. ...
 49. ...
 50. ...
 51. ...
 52. ...
 53. ...
 54. ...
 55. ...
 56. ...
 57. ...
 58. ...
 59. ...
 60. ...
 61. ...
 62. ...
 63. ...
 64. ...
 65. ...
 66. ...
 67. ...
 68. ...
 69. ...
 70. ...
 71. ...
 72. ...
 73. ...
 74. ...
 75. ...
 76. ...
 77. ...
 78. ...
 79. ...
 80. ...
 81. ...
 82. ...
 83. ...
 84. ...
 85. ...
 86. ...
 87. ...
 88. ...
 89. ...
 90. ...
 91. ...
 92. ...
 93. ...
 94. ...
 95. ...
 96. ...
 97. ...
 98. ...
 99. ...
 100. ...

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY	JEE POOL LAKE		
DRAWN BY	M. N. N. CREEK, TEXAS		
CHECKED BY	EMBANKMENT, SPILLWAY, AND OUTLET WORKS		
APPROVED BY	LOGS OF BORINGS		
SUBMITTED BY	6DC-56		
REPORT NO.	INV NO.	DATED	SEQUENCE NO.
47	47	47	47

TO ACCOMPANY FINAL FOUNDATION REPORT

DRILLING LOG		WELL NO. 500	
SECTION 1		FALL 1960	
HORIZON 1		100' TO 150'	
HORIZON 2		150' TO 200'	
HORIZON 3		200' TO 250'	
HORIZON 4		250' TO 300'	
HORIZON 5		300' TO 350'	
HORIZON 6		350' TO 400'	
HORIZON 7		400' TO 450'	
HORIZON 8		450' TO 500'	
HORIZON 9		500' TO 550'	
HORIZON 10		550' TO 600'	
HORIZON 11		600' TO 650'	
HORIZON 12		650' TO 700'	
HORIZON 13		700' TO 750'	
HORIZON 14		750' TO 800'	
HORIZON 15		800' TO 850'	
HORIZON 16		850' TO 900'	
HORIZON 17		900' TO 950'	
HORIZON 18		950' TO 1000'	
HORIZON 19		1000' TO 1050'	
HORIZON 20		1050' TO 1100'	
HORIZON 21		1100' TO 1150'	
HORIZON 22		1150' TO 1200'	
HORIZON 23		1200' TO 1250'	
HORIZON 24		1250' TO 1300'	
HORIZON 25		1300' TO 1350'	
HORIZON 26		1350' TO 1400'	
HORIZON 27		1400' TO 1450'	
HORIZON 28		1450' TO 1500'	
HORIZON 29		1500' TO 1550'	
HORIZON 30		1550' TO 1600'	
HORIZON 31		1600' TO 1650'	
HORIZON 32		1650' TO 1700'	
HORIZON 33		1700' TO 1750'	
HORIZON 34		1750' TO 1800'	
HORIZON 35		1800' TO 1850'	
HORIZON 36		1850' TO 1900'	
HORIZON 37		1900' TO 1950'	
HORIZON 38		1950' TO 2000'	
HORIZON 39		2000' TO 2050'	
HORIZON 40		2050' TO 2100'	
HORIZON 41		2100' TO 2150'	
HORIZON 42		2150' TO 2200'	
HORIZON 43		2200' TO 2250'	
HORIZON 44		2250' TO 2300'	
HORIZON 45		2300' TO 2350'	
HORIZON 46		2350' TO 2400'	
HORIZON 47		2400' TO 2450'	
HORIZON 48		2450' TO 2500'	
HORIZON 49		2500' TO 2550'	
HORIZON 50		2550' TO 2600'	
HORIZON 51		2600' TO 2650'	
HORIZON 52		2650' TO 2700'	
HORIZON 53		2700' TO 2750'	
HORIZON 54		2750' TO 2800'	
HORIZON 55		2800' TO 2850'	
HORIZON 56		2850' TO 2900'	
HORIZON 57		2900' TO 2950'	
HORIZON 58		2950' TO 3000'	
HORIZON 59		3000' TO 3050'	
HORIZON 60		3050' TO 3100'	
HORIZON 61		3100' TO 3150'	
HORIZON 62		3150' TO 3200'	
HORIZON 63		3200' TO 3250'	
HORIZON 64		3250' TO 3300'	
HORIZON 65		3300' TO 3350'	
HORIZON 66		3350' TO 3400'	
HORIZON 67		3400' TO 3450'	
HORIZON 68		3450' TO 3500'	
HORIZON 69		3500' TO 3550'	
HORIZON 70		3550' TO 3600'	
HORIZON 71		3600' TO 3650'	
HORIZON 72		3650' TO 3700'	
HORIZON 73		3700' TO 3750'	
HORIZON 74		3750' TO 3800'	
HORIZON 75		3800' TO 3850'	
HORIZON 76		3850' TO 3900'	
HORIZON 77		3900' TO 3950'	
HORIZON 78		3950' TO 4000'	
HORIZON 79		4000' TO 4050'	
HORIZON 80		4050' TO 4100'	
HORIZON 81		4100' TO 4150'	
HORIZON 82		4150' TO 4200'	
HORIZON 83		4200' TO 4250'	
HORIZON 84		4250' TO 4300'	
HORIZON 85		4300' TO 4350'	
HORIZON 86		4350' TO 4400'	
HORIZON 87		4400' TO 4450'	
HORIZON 88		4450' TO 4500'	
HORIZON 89		4500' TO 4550'	
HORIZON 90		4550' TO 4600'	
HORIZON 91		4600' TO 4650'	
HORIZON 92		4650' TO 4700'	
HORIZON 93		4700' TO 4750'	
HORIZON 94		4750' TO 4800'	
HORIZON 95		4800' TO 4850'	
HORIZON 96		4850' TO 4900'	
HORIZON 97		4900' TO 4950'	
HORIZON 98		4950' TO 5000'	
HORIZON 99		5000' TO 5050'	
HORIZON 100		5050' TO 5100'	

DESIGNED BY		JOE FLOU LAKE	
DRAWN BY		W. N. VAN CREEK TEXAS	
CHECKED BY		EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
REVISED BY		LOGS OF BORINGS	
SUBMITTED BY		8 A6C-57	
APPROVED BY		INV NO. 100-100-100-100	
DATE		SEQUENCE NO.	
DRAWING NUMBER		SHEET NO.	
		48	

ACCOMPANY FINAL FOUNDATION REPORT

G

F

E

Q

C

1

1

[illegible]

DRILLING LOG

DRILLING LOG	DATE	TIME	DRILLER	LOGGERS
NO. 1	10/1/54	8:00	W. H. BENT	W. H. BENT
<p>1. 0-10' SANDY SILT</p> <p>2. 10-20' SANDY SILT</p> <p>3. 20-30' SANDY SILT</p> <p>4. 30-40' SANDY SILT</p> <p>5. 40-50' SANDY SILT</p> <p>6. 50-60' SANDY SILT</p> <p>7. 60-70' SANDY SILT</p> <p>8. 70-80' SANDY SILT</p> <p>9. 80-90' SANDY SILT</p> <p>10. 90-100' SANDY SILT</p>				

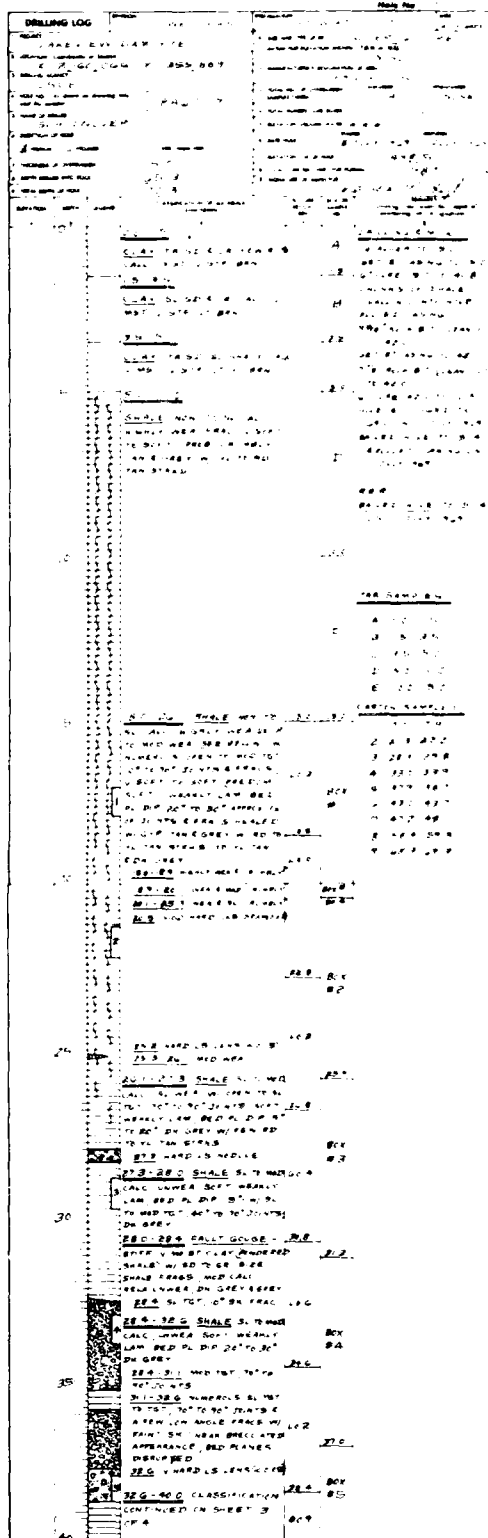
DRILLING LOG	DATE	TIME	DRILLER	LOGGERS
NO. 2	10/1/54	8:00	W. H. BENT	W. H. BENT
<p>1. 0-10' SANDY SILT</p> <p>2. 10-20' SANDY SILT</p> <p>3. 20-30' SANDY SILT</p> <p>4. 30-40' SANDY SILT</p> <p>5. 40-50' SANDY SILT</p> <p>6. 50-60' SANDY SILT</p> <p>7. 60-70' SANDY SILT</p> <p>8. 70-80' SANDY SILT</p> <p>9. 80-90' SANDY SILT</p> <p>10. 90-100' SANDY SILT</p>				

U.S. ARMY ENGINEER DISTRICT, FORT WORTH	
CORPS OF ENGINEERS	
FORT WORTH, TEXAS	
DESIGNED BY	W. H. BENT
DRAWN BY	W. H. BENT
REVIEWED BY	W. H. BENT
DATE	10/1/54
EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
LOGS OF BORINGS	
NO. 1, 2, 3, 4, 5, 6, 7, 8, 9	
PROJECT	BEHNT
DRAWING NUMBER	49
SHEET NO.	49

DELLING LOG		SOUTHWESTERN		LAKEVIEW DAM SITE	
1. PROJECT		2. LOCATION		3. DATE	
LAKEVIEW DAM SITE		LAKEVIEW DAM SITE		1964	
4. SURVEY		5. STRATA		6. REMARKS	
USCE-C		BAGG DB		7. CORRELATION	
CLARK		8. SCALE		9. NOTES	
387		400		10. COMMENTS	
400		400		11. SUMMARY	
400		400		12. CONCLUSIONS	
400		400		13. RECOMMENDATIONS	
400		400		14. REFERENCES	
400		400		15. APPENDICES	
400		400		16. INDEX	
400		400		17. GLOSSARY	
400		400		18. BIBLIOGRAPHY	
400		400		19. PHOTOGRAPHY	
400		400		20. OTHER DATA	
400		400		21. SUMMARY	
400		400		22. CONCLUSIONS	
400		400		23. RECOMMENDATIONS	
400		400		24. REFERENCES	
400		400		25. APPENDICES	
400		400		26. INDEX	
400		400		27. GLOSSARY	
400		400		28. BIBLIOGRAPHY	
400		400		29. PHOTOGRAPHY	
400		400		30. OTHER DATA	
400		400		31. SUMMARY	
400		400		32. CONCLUSIONS	
400		400		33. RECOMMENDATIONS	
400		400		34. REFERENCES	
400		400		35. APPENDICES	
400		400		36. INDEX	
400		400		37. GLOSSARY	
400		400		38. BIBLIOGRAPHY	
400		400		39. PHOTOGRAPHY	
400		400		40. OTHER DATA	
400		400		41. SUMMARY	
400		400		42. CONCLUSIONS	
400		400		43. RECOMMENDATIONS	
400		400		44. REFERENCES	
400		400		45. APPENDICES	
400		400		46. INDEX	
400		400		47. GLOSSARY	
400		400		48. BIBLIOGRAPHY	
400		400		49. PHOTOGRAPHY	
400		400		50. OTHER DATA	
400		400		51. SUMMARY	
400		400		52. CONCLUSIONS	
400		400		53. RECOMMENDATIONS	
400		400		54. REFERENCES	
400		400		55. APPENDICES	
400		400		56. INDEX	
400		400		57. GLOSSARY	
400		400		58. BIBLIOGRAPHY	
400		400		59. PHOTOGRAPHY	
400		400		60. OTHER DATA	
400		400		61. SUMMARY	
400		400		62. CONCLUSIONS	
400		400		63. RECOMMENDATIONS	
400		400		64. REFERENCES	
400		400		65. APPENDICES	
400		400		66. INDEX	
400		400		67. GLOSSARY	
400		400		68. BIBLIOGRAPHY	
400		400		69. PHOTOGRAPHY	
400		400		70. OTHER DATA	
400		400		71. SUMMARY	
400		400		72. CONCLUSIONS	
400		400		73. RECOMMENDATIONS	
400		400		74. REFERENCES	
400		400		75. APPENDICES	
400		400		76. INDEX	
400		400		77. GLOSSARY	
400		400		78. BIBLIOGRAPHY	
400		400		79. PHOTOGRAPHY	
400		400		80. OTHER DATA	
400		400		81. SUMMARY	
400		400		82. CONCLUSIONS	
400		400		83. RECOMMENDATIONS	
400		400		84. REFERENCES	
400		400		85. APPENDICES	
400		400		86. INDEX	
400		400		87. GLOSSARY	
400		400		88. BIBLIOGRAPHY	
400		400		89. PHOTOGRAPHY	
400		400		90. OTHER DATA	
400		400		91. SUMMARY	
400		400		92. CONCLUSIONS	
400		400		93. RECOMMENDATIONS	
400		400		94. REFERENCES	
400		400		95. APPENDICES	
400		400		96. INDEX	
400		400		97. GLOSSARY	
400		400		98. BIBLIOGRAPHY	
400		400		99. PHOTOGRAPHY	
400		400		100. OTHER DATA	
400		400		101. SUMMARY	
400		400		102. CONCLUSIONS	
400		400		103. RECOMMENDATIONS	
400		400		104. REFERENCES	
400		400		105. APPENDICES	
400		400		106. INDEX	
400		400		107. GLOSSARY	
400		400		108. BIBLIOGRAPHY	
400		400		109. PHOTOGRAPHY	
400		400		110. OTHER DATA	
400		400		111. SUMMARY	
400		400		112. CONCLUSIONS	
400		400		113. RECOMMENDATIONS	
400		400		114. REFERENCES	
400		400		115. APPENDICES	
400		400		116. INDEX	
400		400		117. GLOSSARY	
400		400		118. BIBLIOGRAPHY	
400		400		119. PHOTOGRAPHY	
400		400		120. OTHER DATA	
400		400		121. SUMMARY	
400		400		122. CONCLUSIONS	
400		400		123. RECOMMENDATIONS	
400		400		124. REFERENCES	
400		400		125. APPENDICES	
400		400		126. INDEX	
400		400		127. GLOSSARY	
400		400		128. BIBLIOGRAPHY	
400		400		129. PHOTOGRAPHY	
400		400		130. OTHER DATA	
400		400		131. SUMMARY	
400		400		132. CONCLUSIONS	
400		400		133. RECOMMENDATIONS	
400		400		134. REFERENCES	
400		400		135. APPENDICES	
400		400		136. INDEX	
400		400		137. GLOSSARY	
400		400		138. BIBLIOGRAPHY	
400		400		139. PHOTOGRAPHY	
400		400		140. OTHER DATA	
400		400		141. SUMMARY	
400		400		142. CONCLUSIONS	
400		400		143. RECOMMENDATIONS	
400		400		144. REFERENCES	
400		400		145. APPENDICES	
400		400		146. INDEX	
400		400		147. GLOSSARY	
400		400		148. BIBLIOGRAPHY	
400		400		149. PHOTOGRAPHY	
400		400		150. OTHER DATA	
400		400		151. SUMMARY	
400		400		152. CONCLUSIONS	
400		400		153. RECOMMENDATIONS	
400		400		154. REFERENCES	
400		400		155. APPENDICES	
400		400		156. INDEX	
400		400		157. GLOSSARY	
400		400		158. BIBLIOGRAPHY	
400		400		159. PHOTOGRAPHY	
400		400		160. OTHER DATA	
400		400		161. SUMMARY	
400		400		162. CONCLUSIONS	
400		400		163. RECOMMENDATIONS	
400		400		164. REFERENCES	
400		400		165. APPENDICES	
400		400		166. INDEX	
400		400		167. GLOSSARY	
400		400		168. BIBLIOGRAPHY	
400		400		169. PHOTOGRAPHY	
400		400		170. OTHER DATA	
400		400		171. SUMMARY	
400		400		172. CONCLUSIONS	
400		400		173. RECOMMENDATIONS	
400		400		174. REFERENCES	
400		400		175. APPENDICES	
400		400		176. INDEX	
400		400		177. GLOSSARY	
400		400		178. BIBLIOGRAPHY	
400		400		179. PHOTOGRAPHY	
400		400		180. OTHER DATA	
400		400		181. SUMMARY	
400		400		182. CONCLUSIONS	
400		400		183. RECOMMENDATIONS	
400		400		184. REFERENCES	
400		400		185. APPENDICES	
400		400		186. INDEX	
400		400		187. GLOSSARY	
400		400		188. BIBLIOGRAPHY	
400		400		189. PHOTOGRAPHY	
400		400		190. OTHER DATA	
400		400		191. SUMMARY	
400		400		192. CONCLUSIONS	
400		400		193. RECOMMENDATIONS	
400		400		194. REFERENCES	
400		400		195. APPENDICES	
400		400		196. INDEX	
400		400		197. GLOSSARY	
400		400		198. BIBLIOGRAPHY	
400		400		199. PHOTOGRAPHY	
400		400		200. OTHER DATA	
400		400		201. SUMMARY	
400		400		202. CONCLUSIONS	
400		400		203. RECOMMENDATIONS	
400		400		204. REFERENCES	
400		400		205. APPENDICES	
400		400		206. INDEX	
400		400		207. GLOSSARY	
400		400		208. BIBLIOGRAPHY	
400		400		209. PHOTOGRAPHY	
400		400		210. OTHER DATA	
400		400		211. SUMMARY	
400		400		212. CONCLUSIONS	
400		400		213. RECOMMENDATIONS	
400		400		214. REFERENCES	
400		400		215. APPENDICES	
400		400		216. INDEX	
400		400		217. GLOSSARY	
400		400		218. BIBLIOGRAPHY	
400		400		219. PHOTOGRAPHY	
400		400		220. OTHER DATA	
400		400		221. SUMMARY	
400		400		222. CONCLUSIONS	
400		400		223. RECOMMENDATIONS	
400		400		224. REFERENCES	
400		400		225. APPENDICES	
400		400		226. INDEX	
400		400		227. GLOSSARY	
400		400		228. BIBLIOGRAPHY	
400		400		229. PHOTOGRAPHY	
400		400		230. OTHER DATA	
400		400		231. SUMMARY	
400		400		232. CONCLUSIONS	
400		400		233. RECOMMENDATIONS	
400		400		234. REFERENCES	
400		400		235. APPENDICES	
400		400		236. INDEX	
400		400		237. GLOSSARY	
400		400		238. BIBLIOGRAPHY	
400		400		239. PHOTOGRAPHY	
400		400		240. OTHER DATA	
400		400		241. SUMMARY	
400		400		242. CONCLUSIONS	
400		400		243. RECOMMENDATIONS	
400		400		244. REFERENCES	
400		400		245. APPENDICES	
400		400		246. INDEX	
400		400		247. GLOSSARY	
400		400		248. BIBLIOGRAPHY	
400		400		249. PHOTOGRAPHY	
400		400		250. OTHER DATA	
400		400		251. SUMMARY	
400		400		252. CONCLUSIONS	
400		400		253. RECOMMENDATIONS	
400		400		254. REFERENCES	
400		400		255. APPENDICES	
400		400		256. INDEX	
400		400		257. GLOSSARY	
400		400		258. BIBLIOGRAPHY	
400		400		259. PHOTOGRAPHY	
400		400		260. OTHER DATA	
400		400		261. SUMMARY	
400		400		262. CONCLUSIONS	
400		400		263. RECOMMENDATIONS	
400		400		264. REFERENCES	
400		400		265. APPENDICES	
400		400		266. INDEX	
400		400		267. GLOSSARY	
400		400		268. BIBLIOGRAPHY	
400		400		269. PHOTOGRAPHY	
400		400		270. OTHER DATA	
400		400		271. SUMMARY	
400		400		272. CONCLUSIONS	
400		400		273. RECOMMENDATIONS	
400		400		274. REFERENCES	
400		400		275. APPENDICES	
400		400		276. INDEX	
400		400		277. GLOSSARY	
400		400		278. BIBLIOGRAPHY	
400		400		279. PHOTOGRAPHY	
400		400		280. OTHER DATA	
400		400		281. SUMMARY	
400		400		282. CONCLUSIONS	
400		400		283. RECOMMENDATIONS	
400		400		284. REFERENCES	
400		400		285. APPENDICES	
400		400		286. INDEX	
400		400		287. GLOSSARY	
400		400		288. BIBLIOGRAPHY	
400		400		289. PHOTOGRAPHY	
400		400		290. OTHER DATA	
400		400		291. SUMMARY	
400		400		292. CONCLUSIONS	
400		400		293. RECOMMENDATIONS	
400		400		294. REFERENCES	
400		400		295. APPENDICES	
400		400		296. INDEX	
400		400		297. GLOSSARY	
400		400		298. BIBLIOGRAPHY	
400		400		299. PHOTOGRAPHY	
400		400		300. OTHER DATA	
400		400		301. SUMMARY	
400		400		302. CONCLUSIONS	
400		400		303. RECOMMENDATIONS	
400		400		304. REFERENCES	
400		400		305. APPENDICES	
400		400		306. INDEX	
400		400		307. GLOSSARY	
400		400		308. BIBLIOGRAPHY	
400		400		309. PHOTOGRAPHY	
400		400		310. OTHER DATA	
400		400		311. SUMMARY	

[illegible]

TO ACCOMPANY FINAL FOUNDATION REPORT



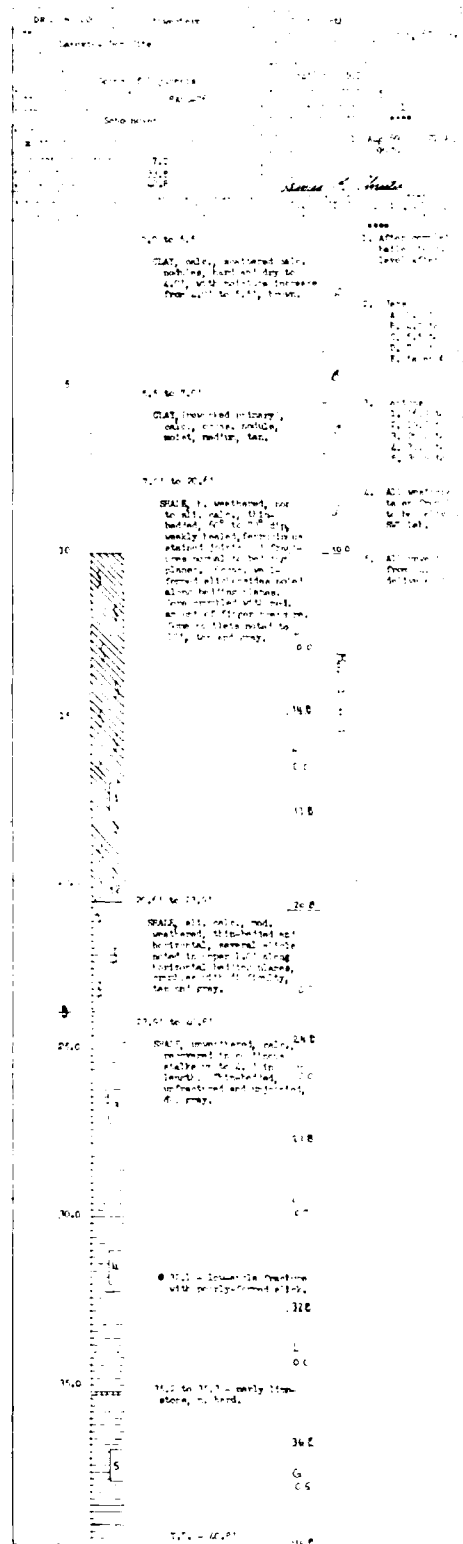
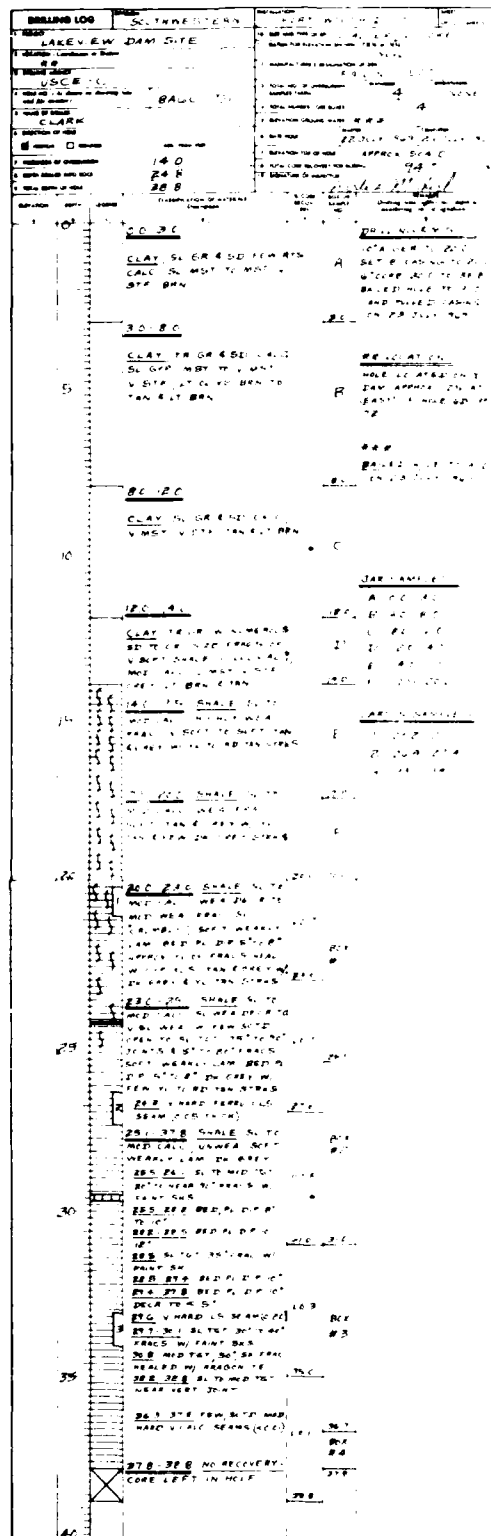
BORING LOG B66C-71 CONTINUED ON 53

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
PROJECT NO. JCE PCDL LAKE MOUNTAIN CREEK, TEXAS		LOGS OF BORINGS B66C-70 AND B66C-71	
DRAWING NO. 53		DATE JULY 1961	
BY ROBERT KENN		SHEET NO. 53	

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible]

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		15-4840-10-0000	
DESIGNED BY S. M. WILSON		LOCATION LAKE FORT LAKE MOUNTAIN CREEK, TEXAS	
DRAWN BY W. L. LEE		EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
CHECKED BY S. M. WILSON		LOGS OF BORINGS BAC6-71, 6DC3F-72 AND 843F-73	
APPROVED BY ROBERT W. LEE		DATE JAN 15 1961	
DRAWING NUMBER		SHEET NO. 54	



[illegible]

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY J. P. ... CHECKED BY H. L. ... REVISION BY J. P. ... DRAWN BY D. W. ...	MOUNTAIN CREEK TEXAS EMBANKMENT, SPILLWAY AND OUTLET WORKS LOGS OF BORINGS BARGE NO. 1 AND BARGE NO. 2 DATE ... DRAWING NUMBER ... SHEET NO. 27
PROJECT NO. ... DRAWING NO. ...	SHEET NO. 27

DRILLING LOG
Southwest 80198
Latent view Dam Site
60G-78
15.0
50.0
60.0

DRILLING LOG	DATE	TIME	DEPTH	DESCRIPTION	REMARKS
LAKEVIEW E.D.S.	10/10/54	10:00	0	Surface	
			10	CLAY, BL. SD. TR. TO MGT.	
			20	CLAY, BL. SD. TR. TO MGT.	
			30	CLAY, BL. SD. TR. TO MGT.	
			40	CLAY, BL. SD. TR. TO MGT.	
			50	CLAY, BL. SD. TR. TO MGT.	
			60	CLAY, BL. SD. TR. TO MGT.	
			70	CLAY, BL. SD. TR. TO MGT.	
			80	CLAY, BL. SD. TR. TO MGT.	
			90	CLAY, BL. SD. TR. TO MGT.	
			100	CLAY, BL. SD. TR. TO MGT.	
			110	CLAY, BL. SD. TR. TO MGT.	
			120	CLAY, BL. SD. TR. TO MGT.	
			130	CLAY, BL. SD. TR. TO MGT.	
			140	CLAY, BL. SD. TR. TO MGT.	
			150	CLAY, BL. SD. TR. TO MGT.	
			160	CLAY, BL. SD. TR. TO MGT.	
			170	CLAY, BL. SD. TR. TO MGT.	
			180	CLAY, BL. SD. TR. TO MGT.	
			190	CLAY, BL. SD. TR. TO MGT.	
			200	CLAY, BL. SD. TR. TO MGT.	
			210	CLAY, BL. SD. TR. TO MGT.	
			220	CLAY, BL. SD. TR. TO MGT.	
			230	CLAY, BL. SD. TR. TO MGT.	
			240	CLAY, BL. SD. TR. TO MGT.	
			250	CLAY, BL. SD. TR. TO MGT.	
			260	CLAY, BL. SD. TR. TO MGT.	
			270	CLAY, BL. SD. TR. TO MGT.	
			280	CLAY, BL. SD. TR. TO MGT.	
			290	CLAY, BL. SD. TR. TO MGT.	
			300	CLAY, BL. SD. TR. TO MGT.	
			310	CLAY, BL. SD. TR. TO MGT.	
			320	CLAY, BL. SD. TR. TO MGT.	
			330	CLAY, BL. SD. TR. TO MGT.	
			340	CLAY, BL. SD. TR. TO MGT.	
			350	CLAY, BL. SD. TR. TO MGT.	
			360	CLAY, BL. SD. TR. TO MGT.	
			370	CLAY, BL. SD. TR. TO MGT.	
			380	CLAY, BL. SD. TR. TO MGT.	
			390	CLAY, BL. SD. TR. TO MGT.	
			400	CLAY, BL. SD. TR. TO MGT.	
			410	CLAY, BL. SD. TR. TO MGT.	
			420	CLAY, BL. SD. TR. TO MGT.	
			430	CLAY, BL. SD. TR. TO MGT.	
			440	CLAY, BL. SD. TR. TO MGT.	
			450	CLAY, BL. SD. TR. TO MGT.	
			460	CLAY, BL. SD. TR. TO MGT.	
			470	CLAY, BL. SD. TR. TO MGT.	
			480	CLAY, BL. SD. TR. TO MGT.	
			490	CLAY, BL. SD. TR. TO MGT.	
			500	CLAY, BL. SD. TR. TO MGT.	
			510	CLAY, BL. SD. TR. TO MGT.	
			520	CLAY, BL. SD. TR. TO MGT.	
			530	CLAY, BL. SD. TR. TO MGT.	
			540	CLAY, BL. SD. TR. TO MGT.	
			550	CLAY, BL. SD. TR. TO MGT.	
			560	CLAY, BL. SD. TR. TO MGT.	
			570	CLAY, BL. SD. TR. TO MGT.	
			580	CLAY, BL. SD. TR. TO MGT.	
			590	CLAY, BL. SD. TR. TO MGT.	
			600	CLAY, BL. SD. TR. TO MGT.	
			610	CLAY, BL. SD. TR. TO MGT.	
			620	CLAY, BL. SD. TR. TO MGT.	
			630	CLAY, BL. SD. TR. TO MGT.	
			640	CLAY, BL. SD. TR. TO MGT.	
			650	CLAY, BL. SD. TR. TO MGT.	
			660	CLAY, BL. SD. TR. TO MGT.	
			670	CLAY, BL. SD. TR. TO MGT.	
			680	CLAY, BL. SD. TR. TO MGT.	
			690	CLAY, BL. SD. TR. TO MGT.	
			700	CLAY, BL. SD. TR. TO MGT.	
			710	CLAY, BL. SD. TR. TO MGT.	
			720	CLAY, BL. SD. TR. TO MGT.	
			730	CLAY, BL. SD. TR. TO MGT.	
			740	CL	

[illegible]

UNITED STATES OF AMERICA U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY J. H. ...	LOC. FOL LAKE MOUNTAIN CREEK, TEXAS
DRAWN BY W. E. ...	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVISION BY ...	LOGS OF BORINGS RA-82, 83, AND 8A-84
SCALE 1" = 10'	DRAWING NO. 58 SHEET NO. 58 OF 58

ACCOMPANY FINAL FOUNDATION REPORT

DRAWING NO. 60-85, 86, 87 AND 88
 PROJECT NO. 60-85, 86, 87 AND 88
 TITLE
 EMBANKMENT, SPILLWAY, AND OUTLET WORKS
 LOGS OF BORINGS
 60-85, 86, 87 AND 60-88
 DRAWN BY
 HLE
 CHECKED BY
 R. BEHN
 DATE
 11/1/58

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY R. BEHN	JOE FOD, LAKE MOUNTAIN CREEK, TEXAS		
DRAWN BY HLE	EMBANKMENT, SPILLWAY, AND OUTLET WORKS		
REVIEWED BY R. BEHN	LOGS OF BORINGS 60-85, 86, 87 AND 60-88		
SUBMITTED BY ROBERT BEHN	INV NO. 60-85, 86, 87 AND 88	DATED 11/1/58	SEQUENCE NO. 59
DRAWING NUMBER	SHEET NO. 59	59	

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible]

DRILLING LOG

DATE: 10/1/68

LOCATION: JOE POOL LAKE, MOUNTAIN CREEK, TEXAS

PROJECT: EMBANKMENT, SPILLWAY, AND OUTLET WORKS

LOG NO: 8A-89, 6DC-90 AND 8A-92, 93

DRILLER: [Name]

LOGGERS: [Name]

REMARKS: [Text]

1. [Text]

2. [Text]

3. [Text]

4. [Text]

5. [Text]

6. [Text]

7. [Text]

8. [Text]

9. [Text]

10. [Text]

11. [Text]

12. [Text]

13. [Text]

14. [Text]

15. [Text]

16. [Text]

17. [Text]

18. [Text]

19. [Text]

20. [Text]

21. [Text]

22. [Text]

23. [Text]

24. [Text]

25. [Text]

26. [Text]

27. [Text]

28. [Text]

29. [Text]

30. [Text]

31. [Text]

32. [Text]

33. [Text]

34. [Text]

35. [Text]

36. [Text]

37. [Text]

38. [Text]

39. [Text]

40. [Text]

41. [Text]

42. [Text]

43. [Text]

44. [Text]

45. [Text]

46. [Text]

47. [Text]

48. [Text]

49. [Text]

50. [Text]

51. [Text]

52. [Text]

53. [Text]

54. [Text]

55. [Text]

56. [Text]

57. [Text]

58. [Text]

59. [Text]

60. [Text]

61. [Text]

62. [Text]

63. [Text]

64. [Text]

65. [Text]

66. [Text]

67. [Text]

68. [Text]

69. [Text]

70. [Text]

71. [Text]

72. [Text]

73. [Text]

74. [Text]

75. [Text]

76. [Text]

77. [Text]

78. [Text]

79. [Text]

80. [Text]

81. [Text]

82. [Text]

83. [Text]

84. [Text]

85. [Text]

86. [Text]

87. [Text]

88. [Text]

89. [Text]

90. [Text]

91. [Text]

92. [Text]

93. [Text]

94. [Text]

95. [Text]

96. [Text]

97. [Text]

98. [Text]

99. [Text]

100. [Text]

DRILLING LOG

DATE: 10/1/68

LOCATION: JOE POOL LAKE, MOUNTAIN CREEK, TEXAS

PROJECT: EMBANKMENT, SPILLWAY, AND OUTLET WORKS

LOG NO: 8A-89, 6DC-90 AND 8A-92, 93

DRILLER: [Name]

LOGGERS: [Name]

REMARKS: [Text]

1. [Text]

2. [Text]

3. [Text]

4. [Text]

5. [Text]

6. [Text]

7. [Text]

8. [Text]

9. [Text]

10. [Text]

11. [Text]

12. [Text]

13. [Text]

14. [Text]

15. [Text]

16. [Text]

17. [Text]

18. [Text]

19. [Text]

20. [Text]

21. [Text]

22. [Text]

23. [Text]

24. [Text]

25. [Text]

26. [Text]

27. [Text]

28. [Text]

29. [Text]

30. [Text]

31. [Text]

32. [Text]

33. [Text]

34. [Text]

35. [Text]

36. [Text]

37. [Text]

38. [Text]

39. [Text]

40. [Text]

41. [Text]

42. [Text]

43. [Text]

44. [Text]

45. [Text]

46. [Text]

47. [Text]

48. [Text]

49. [Text]

50. [Text]

51. [Text]

52. [Text]

53. [Text]

54. [Text]

55. [Text]

56. [Text]

57. [Text]

58. [Text]

59. [Text]

60. [Text]

61. [Text]

62. [Text]

63. [Text]

64. [Text]

65. [Text]

66. [Text]

67. [Text]

68. [Text]

69. [Text]

70. [Text]

71. [Text]

72. [Text]

73. [Text]

74. [Text]

75. [Text]

76. [Text]

77. [Text]

78. [Text]

79. [Text]

80. [Text]

81. [Text]

82. [Text]

83. [Text]

84. [Text]

85. [Text]

86. [Text]

87. [Text]

88. [Text]

89. [Text]

90. [Text]

91. [Text]

92. [Text]

93. [Text]

94. [Text]

95. [Text]

96. [Text]

97. [Text]

98. [Text]

99. [Text]

100. [Text]

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: [Name]	JOE POOL LAKE MOUNTAIN CREEK, TEXAS
DRAWN BY: [Name]	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVIEWED BY: [Name]	LOGS OF BORINGS 8A-89, 6DC-90 AND 8A-92, 93
TURNED IN BY: [Name]	INSTRUMENT NO. [Number]
DATE: [Date]	SHEET NO. 60

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible][illegible]

Handwritten notes on the left margin, including "Notes" and "Remarks".

DRILLING LOG
 Date: 10/1/54
 Location: ...
 Description of soil layers and drilling details.

DRILLING LOG
 Date: 10/1/54
 Location: ...
 Description of soil layers and drilling details.

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
DESIGNED BY H. P. ...		CHECKED BY H. P. ...	
DRAWN BY H. P. ...		PROJECT NO. 63-8-2003	
REVIEWED BY H. P. ...		DATE 10/1/54	
SUBMITTED BY ROBERT REHM		DRAWING NUMBER 61	

G

F

E

D

C

B

A

BULLDOG LOG		DATE		TIME		PAGE	
1. PROJECT		2. LOCATION		3. DATE		4. TIME	
5. SURVEYOR		6. INSTRUMENT		7. METHOD		8. NOTES	
9. OBSERVATIONS		10. CALCULATIONS		11. RESULTS		12. COMMENTS	
13. SUMMARY		14. CONCLUSIONS		15. RECOMMENDATIONS		16. SIGNATURE	
17. DATE		18. TIME		19. PAGE		20. TOTAL	
21. PROJECT		22. LOCATION		23. DATE		24. TIME	
25. SURVEYOR		26. INSTRUMENT		27. METHOD		28. NOTES	
29. OBSERVATIONS		30. CALCULATIONS		31. RESULTS		32. COMMENTS	
33. SUMMARY		34. CONCLUSIONS		35. RECOMMENDATIONS		36. SIGNATURE	
37. DATE		38. TIME		39. PAGE		40. TOTAL	

1. PROJECT: [illegible]
2. LOCATION: [illegible]
3. DATE: [illegible]
4. TIME: [illegible]
5. SURVEYOR: [illegible]
6. INSTRUMENT: [illegible]
7. METHOD: [illegible]
8. NOTES: [illegible]
9. OBSERVATIONS: [illegible]
10. CALCULATIONS: [illegible]
11. RESULTS: [illegible]
12. COMMENTS: [illegible]
13. SUMMARY: [illegible]
14. CONCLUSIONS: [illegible]
15. RECOMMENDATIONS: [illegible]
16. SIGNATURE: [illegible]
17. DATE: [illegible]
18. TIME: [illegible]
19. PAGE: [illegible]
20. TOTAL: [illegible]
21. PROJECT: [illegible]
22. LOCATION: [illegible]
23. DATE: [illegible]
24. TIME: [illegible]
25. SURVEYOR: [illegible]
26. INSTRUMENT: [illegible]
27. METHOD: [illegible]
28. NOTES: [illegible]
29. OBSERVATIONS: [illegible]
30. CALCULATIONS: [illegible]
31. RESULTS: [illegible]
32. COMMENTS: [illegible]
33. SUMMARY: [illegible]
34. CONCLUSIONS: [illegible]
35. RECOMMENDATIONS: [illegible]
36. SIGNATURE: [illegible]
37. DATE: [illegible]
38. TIME: [illegible]
39. PAGE: [illegible]
40. TOTAL: [illegible]

[Faint, mostly illegible text and tables on the right page, possibly a continuation of the log or a separate report.]

AD-A193 342

COMPLETION OF EMBANKMENT AND SPILLWAY JOE POOL LAKE
MOUNTAIN CREEK TEXAS(U) ARMY ENGINEER DISTRICT FORT
WORTH TX A J MARR FEB 88

3/3

UNCLASSIFIED

F/G 13/2

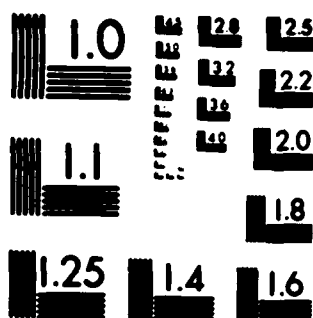
ML

END

DATE

FORMED

78



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

Port North	1
1.0	
2.0	
3.0	
4.0	
5.0	
6.0	
7.0	
8.0	
9.0	
10.0	
11.0	
12.0	
13.0	
14.0	
15.0	
16.0	
17.0	
18.0	
19.0	
20.0	
21.0	
22.0	
23.0	
24.0	
25.0	
26.0	
27.0	
28.0	
29.0	
30.0	
31.0	
32.0	
33.0	
34.0	
35.0	
36.0	
37.0	
38.0	
39.0	
40.0	
41.0	
42.0	
43.0	
44.0	
45.0	
46.0	
47.0	
48.0	
49.0	
50.0	
51.0	
52.0	
53.0	
54.0	
55.0	
56.0	
57.0	
58.0	
59.0	
60.0	
61.0	
62.0	
63.0	
64.0	
65.0	
66.0	
67.0	
68.0	
69.0	
70.0	
71.0	
72.0	
73.0	
74.0	
75.0	
76.0	
77.0	
78.0	
79.0	
80.0	
81.0	
82.0	
83.0	
84.0	
85.0	
86.0	
87.0	
88.0	
89.0	
90.0	
91.0	
92.0	
93.0	
94.0	
95.0	
96.0	
97.0	
98.0	
99.0	
100.0	

DRILLING LOG	Southern	Port North
Latitude 32° 15'	Longitude 97° 15'	Altitude 1200
Depth of Well	BMG-30	BMG-30
Spillway	Spillway	Spillway
11.5	11.5	11.5
12.5	12.5	12.5
13.5	13.5	13.5
14.5	14.5	14.5
15.5	15.5	15.5
16.5	16.5	16.5
17.5	17.5	17.5
18.5	18.5	18.5
19.5	19.5	19.5
20.5	20.5	20.5
21.5	21.5	21.5
22.5	22.5	22.5
23.5	23.5	23.5
24.5	24.5	24.5
25.5	25.5	25.5
26.5	26.5	26.5
27.5	27.5	27.5
28.5	28.5	28.5
29.5	29.5	29.5
30.5	30.5	30.5
31.5	31.5	31.5
32.5	32.5	32.5
33.5	33.5	33.5
34.5	34.5	34.5
35.5	35.5	35.5
36.5	36.5	36.5
37.5	37.5	37.5
38.5	38.5	38.5
39.5	39.5	39.5
40.5	40.5	40.5
41.5	41.5	41.5
42.5	42.5	42.5
43.5	43.5	43.5
44.5	44.5	44.5
45.5	45.5	45.5
46.5	46.5	46.5
47.5	47.5	47.5
48.5	48.5	48.5
49.5	49.5	49.5
50.5	50.5	50.5
51.5	51.5	51.5
52.5	52.5	52.5
53.5	53.5	53.5
54.5	54.5	54.5
55.5	55.5	55.5
56.5	56.5	56.5
57.5	57.5	57.5
58.5	58.5	58.5
59.5	59.5	59.5
60.5	60.5	60.5
61.5	61.5	61.5
62.5	62.5	62.5
63.5	63.5	63.5
64.5	64.5	64.5
65.5	65.5	65.5
66.5	66.5	66.5
67.5	67.5	67.5
68.5	68.5	68.5
69.5	69.5	69.5
70.5	70.5	70.5
71.5	71.5	71.5
72.5	72.5	72.5
73.5	73.5	73.5
74.5	74.5	74.5
75.5	75.5	75.5
76.5	76.5	76.5
77.5	77.5	77.5
78.5	78.5	78.5
79.5	79.5	79.5
80.5	80.5	80.5
81.5	81.5	81.5
82.5	82.5	82.5
83.5	83.5	83.5
84.5	84.5	84.5
85.5	85.5	85.5
86.5	86.5	86.5
87.5	87.5	87.5
88.5	88.5	88.5
89.5	89.5	89.5
90.5	90.5	90.5
91.5	91.5	91.5
92.5	92.5	92.5
93.5	93.5	93.5
94.5	94.5	94.5
95.5	95.5	95.5
96.5	96.5	96.5
97.5	97.5	97.5
98.5	98.5	98.5
99.5	99.5	99.5
100.5	100.5	100.5

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: P. DEHN	JOE POOL LAKE MOUNTAIN CREEK, TEXAS
CHECKED BY: H.R.	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
REVISED BY: P. DEHN	LOGS OF BORINGS BAGC-300 AND BAGC-301
APPROVED BY: ROBERT DEHN	INSTR. NO. DACK-49-B-0003
DATED JULY 1961	SHEET NO. 63

TO ACCOMPANY FINAL FOUNDATION REPORT

[illegible][illegible]

TO ACCOMPANY FINAL FOUNDATION REPORT

Borehole Log		Sheet No. 65	
PROJECT: J. Pool Lake		DATE AND TIME OF DAY: 10:00 AM	
LOCATION: J. Pool Lake, 10 miles N. of Fort Worth, Texas		DATE OF SURVEY: 10/10/50	
Borehole No. 1		Borehole No. 2	
1. LOCATION OF BOREHOLE		2. LOCATION OF BOREHOLE	
3. DATE AND TIME OF DAY		4. DATE AND TIME OF DAY	
5. LOCATION OF BOREHOLE		6. LOCATION OF BOREHOLE	
7. DATE AND TIME OF DAY		8. DATE AND TIME OF DAY	
9. LOCATION OF BOREHOLE		10. LOCATION OF BOREHOLE	
11. DATE AND TIME OF DAY		12. DATE AND TIME OF DAY	
13. LOCATION OF BOREHOLE		14. LOCATION OF BOREHOLE	
15. DATE AND TIME OF DAY		16. DATE AND TIME OF DAY	
17. LOCATION OF BOREHOLE		18. LOCATION OF BOREHOLE	
19. DATE AND TIME OF DAY		20. DATE AND TIME OF DAY	
21. LOCATION OF BOREHOLE		22. LOCATION OF BOREHOLE	
23. DATE AND TIME OF DAY		24. DATE AND TIME OF DAY	
25. LOCATION OF BOREHOLE		26. LOCATION OF BOREHOLE	
27. DATE AND TIME OF DAY		28. DATE AND TIME OF DAY	
29. LOCATION OF BOREHOLE		30. LOCATION OF BOREHOLE	
31. DATE AND TIME OF DAY		32. DATE AND TIME OF DAY	
33. LOCATION OF BOREHOLE		34. LOCATION OF BOREHOLE	
35. DATE AND TIME OF DAY		36. DATE AND TIME OF DAY	
37. LOCATION OF BOREHOLE		38. LOCATION OF BOREHOLE	
39. DATE AND TIME OF DAY		40. DATE AND TIME OF DAY	
41. LOCATION OF BOREHOLE		42. LOCATION OF BOREHOLE	
43. DATE AND TIME OF DAY		44. DATE AND TIME OF DAY	
45. LOCATION OF BOREHOLE		46. LOCATION OF BOREHOLE	
47. DATE AND TIME OF DAY		48. DATE AND TIME OF DAY	
49. LOCATION OF BOREHOLE		50. LOCATION OF BOREHOLE	
51. DATE AND TIME OF DAY		52. DATE AND TIME OF DAY	
53. LOCATION OF BOREHOLE		54. LOCATION OF BOREHOLE	
55. DATE AND TIME OF DAY		56. DATE AND TIME OF DAY	
57. LOCATION OF BOREHOLE		58. LOCATION OF BOREHOLE	
59. DATE AND TIME OF DAY		60. DATE AND TIME OF DAY	
61. LOCATION OF BOREHOLE		62. LOCATION OF BOREHOLE	
63. DATE AND TIME OF DAY		64. DATE AND TIME OF DAY	
65. LOCATION OF BOREHOLE		66. LOCATION OF BOREHOLE	
67. DATE AND TIME OF DAY		68. DATE AND TIME OF DAY	
69. LOCATION OF BOREHOLE		70. LOCATION OF BOREHOLE	
71. DATE AND TIME OF DAY		72. DATE AND TIME OF DAY	
73. LOCATION OF BOREHOLE		74. LOCATION OF BOREHOLE	
75. DATE AND TIME OF DAY		76. DATE AND TIME OF DAY	
77. LOCATION OF BOREHOLE		78. LOCATION OF BOREHOLE	
79. DATE AND TIME OF DAY		80. DATE AND TIME OF DAY	
81. LOCATION OF BOREHOLE		82. LOCATION OF BOREHOLE	
83. DATE AND TIME OF DAY		84. DATE AND TIME OF DAY	
85. LOCATION OF BOREHOLE		86. LOCATION OF BOREHOLE	
87. DATE AND TIME OF DAY		88. DATE AND TIME OF DAY	
89. LOCATION OF BOREHOLE		90. LOCATION OF BOREHOLE	
91. DATE AND TIME OF DAY		92. DATE AND TIME OF DAY	
93. LOCATION OF BOREHOLE		94. LOCATION OF BOREHOLE	
95. DATE AND TIME OF DAY		96. DATE AND TIME OF DAY	
97. LOCATION OF BOREHOLE		98. LOCATION OF BOREHOLE	
99. DATE AND TIME OF DAY		100. DATE AND TIME OF DAY	

Borehole Log		Sheet No. 65	
PROJECT: J. Pool Lake		DATE AND TIME OF DAY: 10:00 AM	
LOCATION: J. Pool Lake, 10 miles N. of Fort Worth, Texas		DATE OF SURVEY: 10/10/50	
Borehole No. 1		Borehole No. 2	
1. LOCATION OF BOREHOLE		2. LOCATION OF BOREHOLE	
3. DATE AND TIME OF DAY		4. DATE AND TIME OF DAY	
5. LOCATION OF BOREHOLE		6. LOCATION OF BOREHOLE	
7. DATE AND TIME OF DAY		8. DATE AND TIME OF DAY	
9. LOCATION OF BOREHOLE		10. LOCATION OF BOREHOLE	
11. DATE AND TIME OF DAY		12. DATE AND TIME OF DAY	
13. LOCATION OF BOREHOLE		14. LOCATION OF BOREHOLE	
15. DATE AND TIME OF DAY		16. DATE AND TIME OF DAY	
17. LOCATION OF BOREHOLE		18. LOCATION OF BOREHOLE	
19. DATE AND TIME OF DAY		20. DATE AND TIME OF DAY	
21. LOCATION OF BOREHOLE		22. LOCATION OF BOREHOLE	
23. DATE AND TIME OF DAY		24. DATE AND TIME OF DAY	
25. LOCATION OF BOREHOLE		26. LOCATION OF BOREHOLE	
27. DATE AND TIME OF DAY		28. DATE AND TIME OF DAY	
29. LOCATION OF BOREHOLE		30. LOCATION OF BOREHOLE	
31. DATE AND TIME OF DAY		32. DATE AND TIME OF DAY	
33. LOCATION OF BOREHOLE		34. LOCATION OF BOREHOLE	
35. DATE AND TIME OF DAY		36. DATE AND TIME OF DAY	
37. LOCATION OF BOREHOLE		38. LOCATION OF BOREHOLE	
39. DATE AND TIME OF DAY		40. DATE AND TIME OF DAY	
41. LOCATION OF BOREHOLE		42. LOCATION OF BOREHOLE	
43. DATE AND TIME OF DAY		44. DATE AND TIME OF DAY	
45. LOCATION OF BOREHOLE		46. LOCATION OF BOREHOLE	
47. DATE AND TIME OF DAY		48. DATE AND TIME OF DAY	
49. LOCATION OF BOREHOLE		50. LOCATION OF BOREHOLE	
51. DATE AND TIME OF DAY		52. DATE AND TIME OF DAY	
53. LOCATION OF BOREHOLE		54. LOCATION OF BOREHOLE	
55. DATE AND TIME OF DAY		56. DATE AND TIME OF DAY	
57. LOCATION OF BOREHOLE		58. LOCATION OF BOREHOLE	
59. DATE AND TIME OF DAY		60. DATE AND TIME OF DAY	
61. LOCATION OF BOREHOLE		62. LOCATION OF BOREHOLE	
63. DATE AND TIME OF DAY		64. DATE AND TIME OF DAY	
65. LOCATION OF BOREHOLE		66. LOCATION OF BOREHOLE	
67. DATE AND TIME OF DAY		68. DATE AND TIME OF DAY	
69. LOCATION OF BOREHOLE		70. LOCATION OF BOREHOLE	
71. DATE AND TIME OF DAY		72. DATE AND TIME OF DAY	
73. LOCATION OF BOREHOLE		74. LOCATION OF BOREHOLE	
75. DATE AND TIME OF DAY		76. DATE AND TIME OF DAY	
77. LOCATION OF BOREHOLE		78. LOCATION OF BOREHOLE	
79. DATE AND TIME OF DAY		80. DATE AND TIME OF DAY	
81. LOCATION OF BOREHOLE		82. LOCATION OF BOREHOLE	
83. DATE AND TIME OF DAY		84. DATE AND TIME OF DAY	
85. LOCATION OF BOREHOLE		86. LOCATION OF BOREHOLE	
87. DATE AND TIME OF DAY		88. DATE AND TIME OF DAY	
89. LOCATION OF BOREHOLE		90. LOCATION OF BOREHOLE	
91. DATE AND TIME OF DAY		92. DATE AND TIME OF DAY	
93. LOCATION OF BOREHOLE		94. LOCATION OF BOREHOLE	
95. DATE AND TIME OF DAY		96. DATE AND TIME OF DAY	
97. LOCATION OF BOREHOLE		98. LOCATION OF BOREHOLE	
99. DATE AND TIME OF DAY		100. DATE AND TIME OF DAY	

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
DESIGNED BY: P. BEHN	JOE POOL LAKE M. J. POOL LAKE, TEXAS
CHECKED BY: P. BEHN	EMBRANKMENT, SPILLWAY, AND OUTLET WORKS
LOGS OF BORINGS 6DC-575, 576, 577 AND 6DC-578	
DATE: JULY 49	BY: M. J. POOL LAKE, TEXAS
DRAWN BY: ROBERT BEHN	SHEET NO. 65

8 TO ACCOMPANY FINAL FOUNDATION REPORT

DRILLING LOG		DATE	TIME	DEPTH	REMARKS
LAWRENCE LANE - Spillway		1976	10:00	0.0'	After drilling, the boring was bailed to a depth of 51.7'. After 24 hours, the boring was dry.
0.0' to 14.4'					1. After drilling, the boring was bailed to a depth of 51.7'. After 24 hours, the boring was dry.
CLAY -					2. (cont.)
0.0' - 2.0'					3. (cont.)
mod. plasticity, stiff, moist, silty.					4. (cont.)
4.0' (DB-1) Dark brown, stiff to very stiff, sparsely sand, gravelly, moist, mod. plasticity, silty, clay, non-cohesive.					5. (cont.)
8.0' (DB-2) Brown, moist, hard, high plasticity, low sand, gravelly, non-cohesive.					6. (cont.)
8.0' (DB-3) Brown, moist, hard to very stiff, silty, high plasticity, silty, white of white crystals, gravelly, sand, pebbles, non-cohesive.					7. (cont.)
10.0' (DB-4) Brown, moist, high plasticity, hard, silty, clay, sand, gravelly, non-cohesive.					8. (cont.)
12.0' (DB-5) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					9. (cont.)
14.4' (DB-6) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					10. (cont.)
16.0' (DB-7) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					11. (cont.)
18.0' (DB-8) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					12. (cont.)
20.0' (DB-9) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					13. (cont.)
22.0' (DB-10) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					14. (cont.)
24.0' (DB-11) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					15. (cont.)
26.0' (DB-12) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					16. (cont.)
28.0' (DB-13) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					17. (cont.)
30.0' (DB-14) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					18. (cont.)
32.0' (DB-15) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					19. (cont.)
34.0' (DB-16) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					20. (cont.)
36.0' (DB-17) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					21. (cont.)
38.0' (DB-18) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					22. (cont.)
40.0' (DB-19) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					23. (cont.)
42.0' (DB-20) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					24. (cont.)
44.0' (DB-21) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					25. (cont.)
46.0' (DB-22) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					26. (cont.)
48.0' (DB-23) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					27. (cont.)
50.0' (DB-24) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					28. (cont.)
51.7' (DB-25) Brown, moist, hard, silty, clay, sand, gravelly, non-cohesive.					29. (cont.)

DRILLING LOG		DATE	TIME	DEPTH	REMARKS
LAWRENCE LANE - Spillway		1976	10:00	0.0'	After drilling, the boring was bailed to a depth of 51.7'. After 24 hours, the boring was dry.
0.0' to 11.2'					1. After drilling, the boring was bailed to a depth of 51.7'. After 24 hours, the boring was dry.
CLAY -					2. (cont.)
0.0' - 1.0'					3. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					4. (cont.)
2.0' - 3.0'					5. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					6. (cont.)
4.0' - 5.0'					7. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					8. (cont.)
6.0' - 7.0'					9. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					10. (cont.)
8.0' - 9.0'					11. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					12. (cont.)
10.0' - 11.2'					13. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					14. (cont.)
11.2' to 15.0'					15. (cont.)
CLAY -					16. (cont.)
11.2' - 12.0'					17. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					18. (cont.)
12.0' - 13.0'					19. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					20. (cont.)
13.0' - 14.0'					21. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					22. (cont.)
14.0' - 15.0'					23. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					24. (cont.)
15.0' - 16.0'					25. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					26. (cont.)
16.0' - 17.0'					27. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					28. (cont.)
17.0' - 18.0'					29. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					30. (cont.)
18.0' - 19.0'					31. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					32. (cont.)
19.0' - 20.0'					33. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					34. (cont.)
20.0' - 21.0'					35. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					36. (cont.)
21.0' - 22.0'					37. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					38. (cont.)
22.0' - 23.0'					39. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					40. (cont.)
23.0' - 24.0'					41. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					42. (cont.)
24.0' - 25.0'					43. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					44. (cont.)
25.0' - 26.0'					45. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					46. (cont.)
26.0' - 27.0'					47. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					48. (cont.)
27.0' - 28.0'					49. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					50. (cont.)
28.0' - 29.0'					51. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					52. (cont.)
29.0' - 30.0'					53. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					54. (cont.)
30.0' - 31.0'					55. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					56. (cont.)
31.0' - 32.0'					57. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					58. (cont.)
32.0' - 33.0'					59. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					60. (cont.)
33.0' - 34.0'					61. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					62. (cont.)
34.0' - 35.0'					63. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					64. (cont.)
35.0' - 36.0'					65. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					66. (cont.)
36.0' - 37.0'					67. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					68. (cont.)
37.0' - 38.0'					69. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					70. (cont.)
38.0' - 39.0'					71. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					72. (cont.)
39.0' - 40.0'					73. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					74. (cont.)
40.0' - 41.0'					75. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					76. (cont.)
41.0' - 42.0'					77. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					78. (cont.)
42.0' - 43.0'					79. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					80. (cont.)
43.0' - 44.0'					81. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					82. (cont.)
44.0' - 45.0'					83. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					84. (cont.)
45.0' - 46.0'					85. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					86. (cont.)
46.0' - 47.0'					87. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					88. (cont.)
47.0' - 48.0'					89. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					90. (cont.)
48.0' - 49.0'					91. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					92. (cont.)
49.0' - 50.0'					93. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					94. (cont.)
50.0' - 51.0'					95. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					96. (cont.)
51.0' - 52.0'					97. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					98. (cont.)
52.0' - 53.0'					99. (cont.)
mod. plasticity, stiff, moist, silty, clay, non-cohesive.					100. (cont.)

Draw No. 10-114
Sheet 1 of 2
DATE: 1 Nov. 1964
BY: [Signature]
CHECKED BY: [Signature]
APPROVED BY: [Signature]
TITLE: [Blank]

DRILLING LOG	
DATE	1 Nov. 1964
TIME	0800
LOCATION	60C-515, 60C-516, 60C-517 AND 60C-524
DRILLER	[Signature]
LOGGERS	[Signature]
TESTER	[Signature]
REMARKS	[Detailed drilling log text]

DRILLING LOG	
DATE	1 Nov. 1964
TIME	0800
LOCATION	60C-515, 60C-516, 60C-517 AND 60C-524
DRILLER	[Signature]
LOGGERS	[Signature]
TESTER	[Signature]
REMARKS	[Detailed drilling log text]

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS			
JOE POOL LAKE MEMPHIS, TENN.			
EMBANKMENT, SPILLWAY, AND OUTLET WORKS			
LOGS OF BORINGS			
60C-515, 60C-516, 60C-517 AND 60C-524			
DRAWN BY: [Signature]		CHECKED BY: [Signature]	
DATE: JULY 1964		SHEET NO. 66	

DRILLING LOG		DATE		TIME	
1. LOCATION		2. SITE		3. DATE	
4. DEPTH		5. TIME		6. TIME	
7. DEPTH		8. TIME		9. TIME	
10. DEPTH		11. TIME		12. TIME	
13. DEPTH		14. TIME		15. TIME	
16. DEPTH		17. TIME		18. TIME	
19. DEPTH		20. TIME		21. TIME	
22. DEPTH		23. TIME		24. TIME	
25. DEPTH		26. TIME		27. TIME	
28. DEPTH		29. TIME		30. TIME	
31. DEPTH		32. TIME		33. TIME	
34. DEPTH		35. TIME		36. TIME	
37. DEPTH		38. TIME		39. TIME	
40. DEPTH		41. TIME		42. TIME	
43. DEPTH		44. TIME		45. TIME	
46. DEPTH		47. TIME		48. TIME	
49. DEPTH		50. TIME		51. TIME	
52. DEPTH		53. TIME		54. TIME	
55. DEPTH		56. TIME		57. TIME	
58. DEPTH		59. TIME		60. TIME	
61. DEPTH		62. TIME		63. TIME	
64. DEPTH		65. TIME		66. TIME	
67. DEPTH		68. TIME		69. TIME	
70. DEPTH		71. TIME		72. TIME	
73. DEPTH		74. TIME		75. TIME	
76. DEPTH		77. TIME		78. TIME	
79. DEPTH		80. TIME		81. TIME	
82. DEPTH		83. TIME		84. TIME	
85. DEPTH		86. TIME		87. TIME	
88. DEPTH		89. TIME		90. TIME	
91. DEPTH		92. TIME		93. TIME	
94. DEPTH		95. TIME		96. TIME	
97. DEPTH		98. TIME		99. TIME	
100. DEPTH		101. TIME		102. TIME	

DRILLING LOG		DATE		TIME	
1. LOCATION		2. SITE		3. DATE	
4. DEPTH		5. TIME		6. TIME	
7. DEPTH		8. TIME		9. TIME	
10. DEPTH		11. TIME		12. TIME	
13. DEPTH		14. TIME		15. TIME	
16. DEPTH		17. TIME		18. TIME	
19. DEPTH		20. TIME		21. TIME	
22. DEPTH		23. TIME		24. TIME	
25. DEPTH		26. TIME		27. TIME	
28. DEPTH		29. TIME		30. TIME	
31. DEPTH		32. TIME		33. TIME	
34. DEPTH		35. TIME		36. TIME	
37. DEPTH		38. TIME		39. TIME	
40. DEPTH		41. TIME		42. TIME	
43. DEPTH		44. TIME		45. TIME	
46. DEPTH		47. TIME		48. TIME	
49. DEPTH		50. TIME		51. TIME	
52. DEPTH		53. TIME		54. TIME	
55. DEPTH		56. TIME		57. TIME	
58. DEPTH		59. TIME		60. TIME	
61. DEPTH		62. TIME		63. TIME	
64. DEPTH		65. TIME		66. TIME	
67. DEPTH		68. TIME		69. TIME	
70. DEPTH		71. TIME		72. TIME	
73. DEPTH		74. TIME		75. TIME	
76. DEPTH		77. TIME		78. TIME	
79. DEPTH		80. TIME		81. TIME	
82. DEPTH		83. TIME		84. TIME	
85. DEPTH		86. TIME		87. TIME	
88. DEPTH		89. TIME		90. TIME	
91. DEPTH		92. TIME		93. TIME	
94. DEPTH		95. TIME		96. TIME	
97. DEPTH		98. TIME		99. TIME	
100. DEPTH		101. TIME		102. TIME	

DRILLING LOG		SITE DATA	
DATE	TIME	LOCATION	DEPTH
1941	10:00	JOE POOL LAKE	100
1. Nature of soil		2. Nature of soil	
3. Nature of soil		4. Nature of soil	
5. Nature of soil		6. Nature of soil	
7. Nature of soil		8. Nature of soil	
9. Nature of soil		10. Nature of soil	
11. Nature of soil		12. Nature of soil	
13. Nature of soil		14. Nature of soil	
15. Nature of soil		16. Nature of soil	
17. Nature of soil		18. Nature of soil	
19. Nature of soil		20. Nature of soil	
21. Nature of soil		22. Nature of soil	
23. Nature of soil		24. Nature of soil	
25. Nature of soil		26. Nature of soil	
27. Nature of soil		28. Nature of soil	
29. Nature of soil		30. Nature of soil	
31. Nature of soil		32. Nature of soil	
33. Nature of soil		34. Nature of soil	
35. Nature of soil		36. Nature of soil	
37. Nature of soil		38. Nature of soil	
39. Nature of soil		40. Nature of soil	
41. Nature of soil		42. Nature of soil	
43. Nature of soil		44. Nature of soil	
45. Nature of soil		46. Nature of soil	
47. Nature of soil		48. Nature of soil	
49. Nature of soil		50. Nature of soil	
51. Nature of soil		52. Nature of soil	
53. Nature of soil		54. Nature of soil	
55. Nature of soil		56. Nature of soil	
57. Nature of soil		58. Nature of soil	
59. Nature of soil		60. Nature of soil	
61. Nature of soil		62. Nature of soil	
63. Nature of soil		64. Nature of soil	
65. Nature of soil		66. Nature of soil	
67. Nature of soil		68. Nature of soil	
69. Nature of soil		70. Nature of soil	
71. Nature of soil		72. Nature of soil	
73. Nature of soil		74. Nature of soil	
75. Nature of soil		76. Nature of soil	
77. Nature of soil		78. Nature of soil	
79. Nature of soil		80. Nature of soil	
81. Nature of soil		82. Nature of soil	
83. Nature of soil		84. Nature of soil	
85. Nature of soil		86. Nature of soil	
87. Nature of soil		88. Nature of soil	
89. Nature of soil		90. Nature of soil	
91. Nature of soil		92. Nature of soil	
93. Nature of soil		94. Nature of soil	
95. Nature of soil		96. Nature of soil	
97. Nature of soil		98. Nature of soil	
99. Nature of soil		100. Nature of soil	

DRILLING LOG		SITE DATA	
DATE	TIME	LOCATION	DEPTH
1941	10:00	JOE POOL LAKE	100
1. Nature of soil		2. Nature of soil	
3. Nature of soil		4. Nature of soil	
5. Nature of soil		6. Nature of soil	
7. Nature of soil		8. Nature of soil	
9. Nature of soil		10. Nature of soil	
11. Nature of soil		12. Nature of soil	
13. Nature of soil		14. Nature of soil	
15. Nature of soil		16. Nature of soil	
17. Nature of soil		18. Nature of soil	
19. Nature of soil		20. Nature of soil	
21. Nature of soil		22. Nature of soil	
23. Nature of soil		24. Nature of soil	
25. Nature of soil		26. Nature of soil	
27. Nature of soil		28. Nature of soil	
29. Nature of soil		30. Nature of soil	
31. Nature of soil		32. Nature of soil	
33. Nature of soil		34. Nature of soil	
35. Nature of soil		36. Nature of soil	
37. Nature of soil		38. Nature of soil	
39. Nature of soil		40. Nature of soil	
41. Nature of soil		42. Nature of soil	
43. Nature of soil		44. Nature of soil	
45. Nature of soil		46. Nature of soil	
47. Nature of soil		48. Nature of soil	
49. Nature of soil		50. Nature of soil	
51. Nature of soil		52. Nature of soil	
53. Nature of soil		54. Nature of soil	
55. Nature of soil		56. Nature of soil	
57. Nature of soil		58. Nature of soil	
59. Nature of soil		60. Nature of soil	
61. Nature of soil		62. Nature of soil	
63. Nature of soil		64. Nature of soil	
65. Nature of soil		66. Nature of soil	
67. Nature of soil		68. Nature of soil	
69. Nature of soil		70. Nature of soil	
71. Nature of soil		72. Nature of soil	
73. Nature of soil		74. Nature of soil	
75. Nature of soil		76. Nature of soil	
77. Nature of soil		78. Nature of soil	
79. Nature of soil		80. Nature of soil	
81. Nature of soil		82. Nature of soil	
83. Nature of soil		84. Nature of soil	
85. Nature of soil		86. Nature of soil	
87. Nature of soil		88. Nature of soil	
89. Nature of soil		90. Nature of soil	
91. Nature of soil		92. Nature of soil	
93. Nature of soil		94. Nature of soil	
95. Nature of soil		96. Nature of soil	
97. Nature of soil		98. Nature of soil	
99. Nature of soil		100. Nature of soil	

U.S. ARMY ENGINEER DISTRICT, FORT WORTH	
CORPS OF ENGINEERS	
FORT WORTH, TEXAS	
DESIGNED BY	JOE POOL LAKE
DRAWN BY	EMBANKMENT, SPILLWAY, AND OUTLET WORKS
CHECKED BY	LOGS OF BORINGS
APPROVED BY	BA6C-525, BA-526, 527 AND BA-528
DATE	JULY 1941
DRAWING NUMBER	SHEET NO. 67

Drilling Log	Time	Remarks	Depth	Remarks
1. 10:00 AM	10:00	1. 10:00 AM	10:00	1. 10:00 AM
2. 10:05 AM	10:05	2. 10:05 AM	10:05	2. 10:05 AM
3. 10:10 AM	10:10	3. 10:10 AM	10:10	3. 10:10 AM
4. 10:15 AM	10:15	4. 10:15 AM	10:15	4. 10:15 AM
5. 10:20 AM	10:20	5. 10:20 AM	10:20	5. 10:20 AM
6. 10:25 AM	10:25	6. 10:25 AM	10:25	6. 10:25 AM
7. 10:30 AM	10:30	7. 10:30 AM	10:30	7. 10:30 AM
8. 10:35 AM	10:35	8. 10:35 AM	10:35	8. 10:35 AM
9. 10:40 AM	10:40	9. 10:40 AM	10:40	9. 10:40 AM
10. 10:45 AM	10:45	10. 10:45 AM	10:45	10. 10:45 AM
11. 10:50 AM	10:50	11. 10:50 AM	10:50	11. 10:50 AM
12. 10:55 AM	10:55	12. 10:55 AM	10:55	12. 10:55 AM
13. 11:00 AM	11:00	13. 11:00 AM	11:00	13. 11:00 AM
14. 11:05 AM	11:05	14. 11:05 AM	11:05	14. 11:05 AM
15. 11:10 AM	11:10	15. 11:10 AM	11:10	15. 11:10 AM
16. 11:15 AM	11:15	16. 11:15 AM	11:15	16. 11:15 AM
17. 11:20 AM	11:20	17. 11:20 AM	11:20	17. 11:20 AM
18. 11:25 AM	11:25	18. 11:25 AM	11:25	18. 11:25 AM
19. 11:30 AM	11:30	19. 11:30 AM	11:30	19. 11:30 AM
20. 11:35 AM	11:35	20. 11:35 AM	11:35	20. 11:35 AM
21. 11:40 AM	11:40	21. 11:40 AM	11:40	21. 11:40 AM
22. 11:45 AM	11:45	22. 11:45 AM	11:45	22. 11:45 AM
23. 11:50 AM	11:50	23. 11:50 AM	11:50	23. 11:50 AM
24. 11:55 AM	11:55	24. 11:55 AM	11:55	24. 11:55 AM
25. 12:00 PM	12:00	25. 12:00 PM	12:00	25. 12:00 PM
26. 12:05 PM	12:05	26. 12:05 PM	12:05	26. 12:05 PM
27. 12:10 PM	12:10	27. 12:10 PM	12:10	27. 12:10 PM
28. 12:15 PM	12:15	28. 12:15 PM	12:15	28. 12:15 PM
29. 12:20 PM	12:20	29. 12:20 PM	12:20	29. 12:20 PM
30. 12:25 PM	12:25	30. 12:25 PM	12:25	30. 12:25 PM
31. 12:30 PM	12:30	31. 12:30 PM	12:30	31. 12:30 PM
32. 12:35 PM	12:35	32. 12:35 PM	12:35	32. 12:35 PM
33. 12:40 PM	12:40	33. 12:40 PM	12:40	33. 12:40 PM
34. 12:45 PM	12:45	34. 12:45 PM	12:45	34. 12:45 PM
35. 12:50 PM	12:50	35. 12:50 PM	12:50	35. 12:50 PM
36. 12:55 PM	12:55	36. 12:55 PM	12:55	36. 12:55 PM
37. 1:00 PM	1:00	37. 1:00 PM	1:00	37. 1:00 PM
38. 1:05 PM	1:05	38. 1:05 PM	1:05	38. 1:05 PM
39. 1:10 PM	1:10	39. 1:10 PM	1:10	39. 1:10 PM
40. 1:15 PM	1:15	40. 1:15 PM	1:15	40. 1:15 PM
41. 1:20 PM	1:20	41. 1:20 PM	1:20	41. 1:20 PM
42. 1:25 PM	1:25	42. 1:25 PM	1:25	42. 1:25 PM
43. 1:30 PM	1:30	43. 1:30 PM	1:30	43. 1:30 PM
44. 1:35 PM	1:35	44. 1:35 PM	1:35	44. 1:35 PM
45. 1:40 PM	1:40	45. 1:40 PM	1:40	45. 1:40 PM
46. 1:45 PM	1:45	46. 1:45 PM	1:45	46. 1:45 PM
47. 1:50 PM	1:50	47. 1:50 PM	1:50	47. 1:50 PM
48. 1:55 PM	1:55	48. 1:55 PM	1:55	48. 1:55 PM
49. 2:00 PM	2:00	49. 2:00 PM	2:00	49. 2:00 PM
50. 2:05 PM	2:05	50. 2:05 PM	2:05	50. 2:05 PM
51. 2:10 PM	2:10	51. 2:10 PM	2:10	51. 2:10 PM
52. 2:15 PM	2:15	52. 2:15 PM	2:15	52. 2:15 PM
53. 2:20 PM	2:20	53. 2:20 PM	2:20	53. 2:20 PM
54. 2:25 PM	2:25	54. 2:25 PM	2:25	54. 2:25 PM

NOTE: TOTAL OF 4 PAGES SEE PAGE 4 AND 5

BIO = 20 N : 60 MCV

BORING LOG		DATE	TIME	NO.
Location: Lake		10/22/74	10:00	533-534
Driller: [Signature]				
Operator: [Signature]				
Remarks: [Text]				
[Detailed log text continues]				

BORING LOG		DATE	TIME	NO.
Location: Lake		10/22/74	10:00	533-535
Driller: [Signature]				
Operator: [Signature]				
Remarks: [Text]				
[Detailed log text continues]				

U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS	
JOE POOL LAKE FORT WORTH, TEXAS	
EMBANKMENT, SPILLWAY, AND OUTLET WORKS	
LOGS OF BORINGS RA 533,534 AND 535	
BY: [Signature]	DATE: JULY 48
PROJECT: [Text]	SHEET NO. 69

DRILLING LOG		WELL NO.		DATE	
1. LOCATION		2. WELL NO.		3. DATE	
4. WELL TYPE		5. WELL DEPTH		6. WELL STATUS	
7. WELL OWNER		8. WELL NO.		9. WELL DEPTH	
10. WELL TYPE		11. WELL DEPTH		12. WELL STATUS	
13. WELL OWNER		14. WELL NO.		15. WELL DEPTH	
16. WELL TYPE		17. WELL DEPTH		18. WELL STATUS	
19. WELL OWNER		20. WELL NO.		21. WELL DEPTH	
22. WELL TYPE		23. WELL DEPTH		24. WELL STATUS	
25. WELL OWNER		26. WELL NO.		27. WELL DEPTH	
28. WELL TYPE		29. WELL DEPTH		30. WELL STATUS	
31. WELL OWNER		32. WELL NO.		33. WELL DEPTH	
34. WELL TYPE		35. WELL DEPTH		36. WELL STATUS	
37. WELL OWNER		38. WELL NO.		39. WELL DEPTH	
40. WELL TYPE		41. WELL DEPTH		42. WELL STATUS	
43. WELL OWNER		44. WELL NO.		45. WELL DEPTH	
46. WELL TYPE		47. WELL DEPTH		48. WELL STATUS	
49. WELL OWNER		50. WELL NO.		51. WELL DEPTH	
52. WELL TYPE		53. WELL DEPTH		54. WELL STATUS	
55. WELL OWNER		56. WELL NO.		57. WELL DEPTH	
58. WELL TYPE		59. WELL DEPTH		60. WELL STATUS	
61. WELL OWNER		62. WELL NO.		63. WELL DEPTH	
64. WELL TYPE		65. WELL DEPTH		66. WELL STATUS	
67. WELL OWNER		68. WELL NO.		69. WELL DEPTH	
70. WELL TYPE		71. WELL DEPTH		72. WELL STATUS	
73. WELL OWNER		74. WELL NO.		75. WELL DEPTH	
76. WELL TYPE		77. WELL DEPTH		78. WELL STATUS	
79. WELL OWNER		80. WELL NO.		81. WELL DEPTH	
82. WELL TYPE		83. WELL DEPTH		84. WELL STATUS	
85. WELL OWNER		86. WELL NO.		87. WELL DEPTH	
88. WELL TYPE		89. WELL DEPTH		90. WELL STATUS	
91. WELL OWNER		92. WELL NO.		93. WELL DEPTH	
94. WELL TYPE		95. WELL DEPTH		96. WELL STATUS	
97. WELL OWNER		98. WELL NO.		99. WELL DEPTH	
100. WELL TYPE		101. WELL DEPTH		102. WELL STATUS	

DRILLING LOG		WELL NO.		DATE	
1. LOCATION		2. WELL NO.		3. DATE	
4. WELL TYPE		5. WELL DEPTH		6. WELL STATUS	
7. WELL OWNER		8. WELL NO.		9. WELL DEPTH	
10. WELL TYPE		11. WELL DEPTH		12. WELL STATUS	
13. WELL OWNER		14. WELL NO.		15. WELL DEPTH	
16. WELL TYPE		17. WELL DEPTH		18. WELL STATUS	
19. WELL OWNER		20. WELL NO.		21. WELL DEPTH	
22. WELL TYPE		23. WELL DEPTH		24. WELL STATUS	
25. WELL OWNER		26. WELL NO.		27. WELL DEPTH	
28. WELL TYPE		29. WELL DEPTH		30. WELL STATUS	
31. WELL OWNER		32. WELL NO.		33. WELL DEPTH	
34. WELL TYPE		35. WELL DEPTH		36. WELL STATUS	
37. WELL OWNER		38. WELL NO.		39. WELL DEPTH	
40. WELL TYPE		41. WELL DEPTH		42. WELL STATUS	
43. WELL OWNER		44. WELL NO.		45. WELL DEPTH	
46. WELL TYPE		47. WELL DEPTH		48. WELL STATUS	
49. WELL OWNER		50. WELL NO.		51. WELL DEPTH	
52. WELL TYPE		53. WELL DEPTH		54. WELL STATUS	
55. WELL OWNER		56. WELL NO.		57. WELL DEPTH	
58. WELL TYPE		59. WELL DEPTH		60. WELL STATUS	
61. WELL OWNER		62. WELL NO.		63. WELL DEPTH	
64. WELL TYPE		65. WELL DEPTH		66. WELL STATUS	
67. WELL OWNER		68. WELL NO.		69. WELL DEPTH	
70. WELL TYPE		71. WELL DEPTH		72. WELL STATUS	
73. WELL OWNER		74. WELL NO.		75. WELL DEPTH	
76. WELL TYPE		77. WELL DEPTH		78. WELL STATUS	
79. WELL OWNER		80. WELL NO.		81. WELL DEPTH	
82. WELL TYPE		83. WELL DEPTH		84. WELL STATUS	
85. WELL OWNER		86. WELL NO.		87. WELL DEPTH	
88. WELL TYPE		89. WELL DEPTH		90. WELL STATUS	
91. WELL OWNER		92. WELL NO.		93. WELL DEPTH	
94. WELL TYPE		95. WELL DEPTH		96. WELL STATUS	
97. WELL OWNER		98. WELL NO.		99. WELL DEPTH	
100. WELL TYPE		101. WELL DEPTH		102. WELL STATUS	

[illegible]

NOTE:
FOR LOCATION OF PACKAGES SEE SEQ.

DESIGNED BY F. DEHM	U.S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS LAKE POOL LAKE M. T. PARKER TEXAS EMBANKMENT, SPILLWAY, AND OUTLET WORKS LOGS OF BORINGS 6DC-536, 557 AND 586C-574
DRAWN BY	
REVIEWED BY F. DEHM	
SUBMITTED BY F. DEHM	
DATE TITLE AND REFERENCE	INV NO. 000000-1-1-0-0093 DATED JULY 1961 DRAWING NUMBER SHEET NO. 70

DRILLING LOG		FIELD		REMARKS		SHEET	
PROJECT		DATE		TIME		NO.	
1. LOCATION		2. DATE		3. TIME		4. NO.	
5. DRILLER		6. DATE		7. TIME		8. NO.	
9. DRILL TYPE		10. DATE		11. TIME		12. NO.	
13. DRILLER		14. DATE		15. TIME		16. NO.	
17. DRILL TYPE		18. DATE		19. TIME		20. NO.	
21. DRILLER		22. DATE		23. TIME		24. NO.	
25. DRILL TYPE		26. DATE		27. TIME		28. NO.	
29. DRILLER		30. DATE		31. TIME		32. NO.	
33. DRILL TYPE		34. DATE		35. TIME		36. NO.	
37. DRILLER		38. DATE		39. TIME		40. NO.	
41. DRILL TYPE		42. DATE		43. TIME		44. NO.	
45. DRILLER		46. DATE		47. TIME		48. NO.	
49. DRILL TYPE		50. DATE		51. TIME		52. NO.	
53. DRILLER		54. DATE		55. TIME		56. NO.	
57. DRILL TYPE		58. DATE		59. TIME		60. NO.	
61. DRILLER		62. DATE		63. TIME		64. NO.	
65. DRILL TYPE		66. DATE		67. TIME		68. NO.	
69. DRILLER		70. DATE		71. TIME		72. NO.	
73. DRILL TYPE		74. DATE		75. TIME		76. NO.	
77. DRILLER		78. DATE		79. TIME		80. NO.	
81. DRILL TYPE		82. DATE		83. TIME		84. NO.	
85. DRILLER		86. DATE		87. TIME		88. NO.	
89. DRILL TYPE		90. DATE		91. TIME		92. NO.	
93. DRILLER		94. DATE		95. TIME		96. NO.	
97. DRILL TYPE		98. DATE		99. TIME		100. NO.	

DRILLING LOG		FIELD		REMARKS		SHEET	
PROJECT		DATE		TIME		NO.	
1. LOCATION		2. DATE		3. TIME		4. NO.	
5. DRILLER		6. DATE		7. TIME		8. NO.	
9. DRILL TYPE		10. DATE		11. TIME		12. NO.	
13. DRILLER		14. DATE		15. TIME		16. NO.	
17. DRILL TYPE		18. DATE		19. TIME		20. NO.	
21. DRILLER		22. DATE		23. TIME		24. NO.	
25. DRILL TYPE		26. DATE		27. TIME		28. NO.	
29. DRILLER		30. DATE		31. TIME		32. NO.	
33. DRILL TYPE		34. DATE		35. TIME		36. NO.	
37. DRILLER		38. DATE		39. TIME		40. NO.	
41. DRILL TYPE		42. DATE		43. TIME		44. NO.	
45. DRILLER		46. DATE		47. TIME		48. NO.	
49. DRILL TYPE		50. DATE		51. TIME		52. NO.	
53. DRILLER		54. DATE		55. TIME		56. NO.	
57. DRILL TYPE		58. DATE		59. TIME		60. NO.	
61. DRILLER		62. DATE		63. TIME		64. NO.	
65. DRILL TYPE		66. DATE		67. TIME		68. NO.	
69. DRILLER		70. DATE		71. TIME		72. NO.	
73. DRILL TYPE		74. DATE		75. TIME		76. NO.	
77. DRILLER		78. DATE		79. TIME		80. NO.	
81. DRILL TYPE		82. DATE		83. TIME		84. NO.	
85. DRILLER		86. DATE		87. TIME		88. NO.	
89. DRILL TYPE		90. DATE		91. TIME		92. NO.	
93. DRILLER		94. DATE		95. TIME		96. NO.	
97. DRILL TYPE		98. DATE		99. TIME		100. NO.	

U.S. ARMY ENGINEER DISTRICT, FORT WORTH		CORPS OF ENGINEERS		FORT WORTH, TEXAS	
DESIGNED BY		JCE POOL LAKE		V. J. REER, TEXAS	
DRAWN BY		EMBANKMENT, SPILLWAY, AND OUTLET WORKS			
REVIEWED BY		LOGS OF BORINGS		8A-584, 585 AND 586C-587	
DATE		JULY 1963		SEQUENCE NO. 71	
DRAWING NUMBER		SHEET NO. 07			

DRILLING LOG		DATE	TIME	DRILLER
1. LOCATION		2. WELL NO.		
3. DEPTH		4. TYPE		
5. REMARKS		6. COMMENTS		
7. LOG		8. LOG		
9. LOG		10. LOG		
11. LOG		12. LOG		
13. LOG		14. LOG		
15. LOG		16. LOG		
17. LOG		18. LOG		
19. LOG		20. LOG		
21. LOG		22. LOG		
23. LOG		24. LOG		
25. LOG		26. LOG		
27. LOG		28. LOG		
29. LOG		30. LOG		
31. LOG		32. LOG		
33. LOG		34. LOG		
35. LOG		36. LOG		
37. LOG		38. LOG		
39. LOG		40. LOG		
41. LOG		42. LOG		
43. LOG		44. LOG		
45. LOG		46. LOG		
47. LOG		48. LOG		
49. LOG		50. LOG		
51. LOG		52. LOG		
53. LOG		54. LOG		
55. LOG		56. LOG		
57. LOG		58. LOG		
59. LOG		60. LOG		
61. LOG		62. LOG		
63. LOG		64. LOG		
65. LOG		66. LOG		
67. LOG		68. LOG		
69. LOG		70. LOG		
71. LOG		72. LOG		
73. LOG		74. LOG		
75. LOG		76. LOG		
77. LOG		78. LOG		
79. LOG		80. LOG		
81. LOG		82. LOG		
83. LOG		84. LOG		
85. LOG		86. LOG		
87. LOG		88. LOG		
89. LOG		90. LOG		
91. LOG		92. LOG		
93. LOG		94. LOG		
95. LOG		96. LOG		
97. LOG		98. LOG		
99. LOG		100. LOG		

DRILLING LOG		DATE	TIME	DRILLER
1. LOCATION		2. WELL NO.		
3. DEPTH		4. TYPE		
5. REMARKS		6. COMMENTS		
7. LOG		8. LOG		
9. LOG		10. LOG		
11. LOG		12. LOG		
13. LOG		14. LOG		
15. LOG		16. LOG		
17. LOG		18. LOG		
19. LOG		20. LOG		
21. LOG		22. LOG		
23. LOG		24. LOG		
25. LOG		26. LOG		
27. LOG		28. LOG		
29. LOG		30. LOG		
31. LOG		32. LOG		
33. LOG		34. LOG		
35. LOG		36. LOG		
37. LOG		38. LOG		
39. LOG		40. LOG		
41. LOG		42. LOG		
43. LOG		44. LOG		
45. LOG		46. LOG		
47. LOG		48. LOG		
49. LOG		50. LOG		
51. LOG		52. LOG		
53. LOG		54. LOG		
55. LOG		56. LOG		
57. LOG		58. LOG		
59. LOG		60. LOG		
61. LOG		62. LOG		
63. LOG		64. LOG		
65. LOG		66. LOG		
67. LOG		68. LOG		
69. LOG		70. LOG		
71. LOG		72. LOG		
73. LOG		74. LOG		
75. LOG		76. LOG		
77. LOG		78. LOG		
79. LOG		80. LOG		
81. LOG		82. LOG		
83. LOG		84. LOG		
85. LOG		86. LOG		
87. LOG		88. LOG		
89. LOG		90. LOG		
91. LOG		92. LOG		
93. LOG		94. LOG		
95. LOG		96. LOG		
97. LOG		98. LOG		
99. LOG		100. LOG		

DRILLING LOG		DATE	WELL NO.	WELL NAME
1	1.00	1.00	1.00	1.00
2	2.00	2.00	2.00	2.00
3	3.00	3.00	3.00	3.00
4	4.00	4.00	4.00	4.00
5	5.00	5.00	5.00	5.00
6	6.00	6.00	6.00	6.00
7	7.00	7.00	7.00	7.00
8	8.00	8.00	8.00	8.00
9	9.00	9.00	9.00	9.00
10	10.00	10.00	10.00	10.00
11	11.00	11.00	11.00	11.00
12	12.00	12.00	12.00	12.00
13	13.00	13.00	13.00	13.00
14	14.00	14.00	14.00	14.00
15	15.00	15.00	15.00	15.00
16	16.00	16.00	16.00	16.00
17	17.00	17.00	17.00	17.00
18	18.00	18.00	18.00	18.00
19	19.00	19.00	19.00	19.00
20	20.00	20.00	20.00	20.00
21	21.00	21.00	21.00	21.00
22	22.00	22.00	22.00	22.00
23	23.00	23.00	23.00	23.00
24	24.00	24.00	24.00	24.00
25	25.00	25.00	25.00	25.00
26	26.00	26.00	26.00	26.00
27	27.00	27.00	27.00	27.00
28	28.00	28.00	28.00	28.00
29	29.00	29.00	29.00	29.00
30	30.00	30.00	30.00	30.00
31	31.00	31.00	31.00	31.00
32	32.00	32.00	32.00	32.00
33	33.00	33.00	33.00	33.00
34	34.00	34.00	34.00	34.00
35	35.00	35.00	35.00	35.00
36	36.00	36.00	36.00	36.00
37	37.00	37.00	37.00	37.00
38	38.00	38.00	38.00	38.00
39	39.00	39.00	39.00	39.00
40	40.00	40.00	40.00	40.00
41	41.00	41.00	41.00	41.00
42	42.00	42.00	42.00	42.00
43	43.00	43.00	43.00	43.00
44	44.00	44.00	44.00	44.00
45	45.00	45.00	45.00	45.00
46	46.00	46.00	46.00	46.00
47	47.00	47.00	47.00	47.00
48	48.00	48.00	48.00	48.00
49	49.00	49.00	49.00	49.00
50	50.00	50.00	50.00	50.00
51	51.00	51.00	51.00	51.00
52	52.00	52.00	52.00	52.00
53	53.00	53.00	53.00	53.00
54	54.00	54.00	54.00	54.00
55	55.00	55.00	55.00	55.00
56	56.00	56.00	56.00	56.00
57	57.00	57.00	57.00	57.00
58	58.00	58.00	58.00	58.00
59	59.00	59.00	59.00	59.00
60	60.00	60.00	60.00	60.00
61	61.00	61.00	61.00	61.00
62	62.00	62.00	62.00	62.00
63	63.00	63.00	63.00	63.00
64	64.00	64.00	64.00	64.00
65	65.00	65.00	65.00	65.00
66	66.00	66.00	66.00	66.00
67	67.00	67.00	67.00	67.00
68	68.00	68.00	68.00	68.00
69	69.00	69.00	69.00	69.00
70				

[illegible]

DESIGNED BY J. H. HARRIS	CHECKED BY J. H. HARRIS	
U. S. ARMY ENGINEER DISTRICT, FORT WORTH CORPS OF ENGINEERS FORT WORTH, TEXAS		
DRAWN BY J. H. HARRIS	LOC. POOL LAKE M. R. R. BR. TEXAS	
EMBANKMENT, SPILLWAY, AND OUTLET WORKS		
REVIEWED BY J. H. HARRIS	LOGS OF BORINGS BA6C-588, 590 AND 60C-596	
SUBMITTED BY J. H. HARRIS	NO. 1 DATED 10/1/54 DRAWING NUMBER SHEET NO. 72 OF 72	

[illegible]



Figure 7. Excavation slope being prepared for backfill. Right (north) side of right abutment deep inspection trench. 27 August 1982.



Figure 8. Excavation slope being prepared for backfill. Left (south) side of right abutment deep inspection trench. 31 August 1982.



Figure 9. Excavation slope being prepared for backfill. Left (south) side of right abutment deep inspection trench. 1 September 1982.



Figure 10. Excavation slope being prepared for backfill. Right (north) side of right abutment deep inspection trench. 2 September 1982.



Figure 11. Excavation slope being cut to final grade. 20 November 1982. Photo taken at right abutment deep inspection trench, station 10+50, looking west.



Figure 12. Excavation slope being cut to final grade. 20 November 1982. Photo taken near right abutment deep inspection trench, station 11+50, looking east.



Figure 13. Excavation in area of stream channel. (Embankment centerline station 54+50 to 61+00) January 1983. Note seepage areas in photo at center and lower right. Photo taken at embankment centerline station 54+00, looking west.



Figure 14. Excavation in area of stream channel. (Embankment centerline station 54+50 to 61+00) January 1983. Note seepage area left side of photo on downstream slope of trench. Photo taken at embankment centerline station 60+00, looking east.



Figure 15. Backfill compaction in area of stream channel, January 1983. Photo taken at embankment & station 60+00, looking south (upstream).

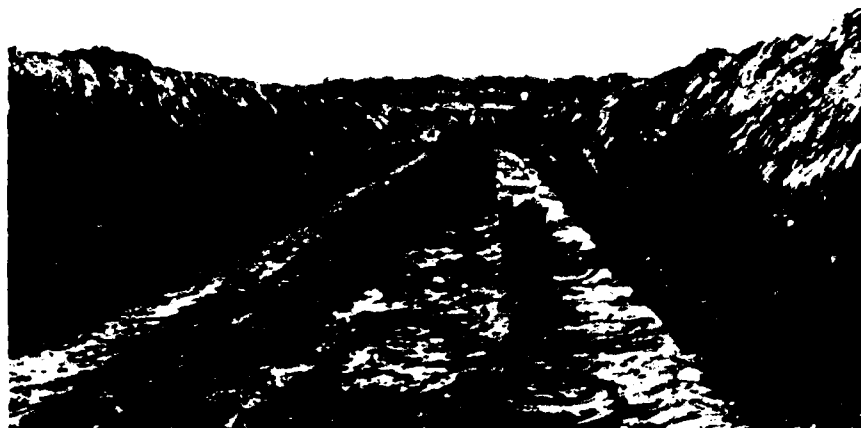


Figure 16. Embankment inspection trench ready for impervious backfill.
29 May 1980. Photo taken at station 36+00, looking east.



Figure 17. Embankment inspection trench ready for impervious backfill.
29 May 1980. Photo taken at station 43+00, looking west.



Figure 18. Embankment inspection trench ready for impervious backfill. 14 September 1984. Photo taken at station 51+50, looking east.



Figure 19. Embankment inspection trench ready for impervious backfill. 14 September 1984. Photo taken at station 53+50, looking east.



Figure 20. Embankment inspection trench being prepared for impervious backfill. 1 March 1983. Photo taken at station 61+00, looking east.



Figure 21. Embankment inspection trench ready for impervious backfill. 17 January 1983. Photo taken at station 65+00 looking at downstream slope.



Figure 22. Embankment inspection trench. Clayey gravel zone exposed in inspection trench along embankment centerline at station 71+00.



Figure 23. Embankment inspection trench ready for impervious backfill. 28 April 1983. Photo taken at station 71+25, looking east.



Figure 24. Embankment inspection trench ready for impervious backfill.
26 October 1983. Photo taken at station 85+00, looking east.



Figure 25. Embankment inspection trench ready for impervious backfill.
17 November 1983. Photo taken at station 88+00, looking west.



Figure 26. Embankment inspection trench ready for impervious backfill. 26 October 1983. Photo taken at station 88+50, looking east.



Figure 27. Embankment inspection trench ready for impervious backfill. 6 January 1981. Photo taken at station 95+00, looking west.

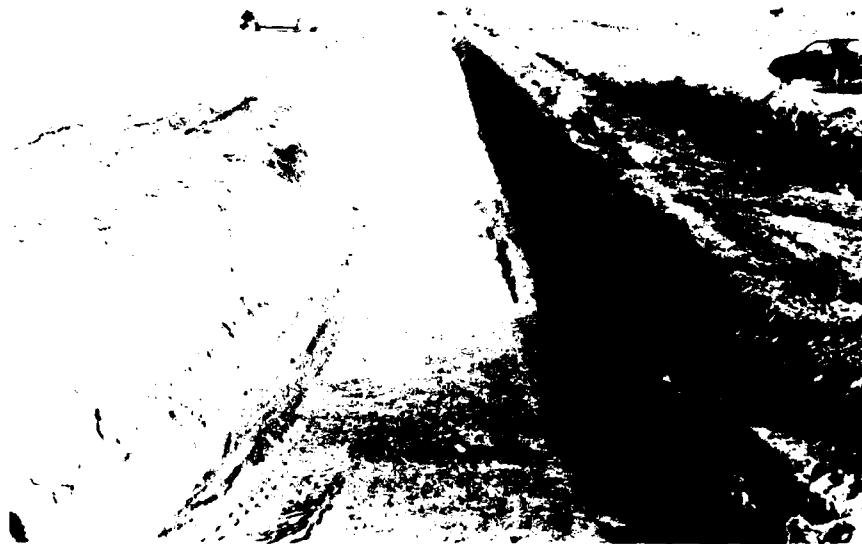


Figure 28. Embankment inspection trench ready for impervious backfill. 17 November 1983. Photo taken at station 95+50, looking east.



Figure 29. Embankment inspection trench. Contact between previously placed impervious fill and natural ground exposed in side of inspection trench.



Figure 30. Embankment inspection trench ready for impervious backfill.
10 December 1983. Photo taken at station 130+00, looking west.



Figure 31. Embankment inspection trench ready for impervious backfill.
10 December 1983. Photo taken at station 132+00, looking west.

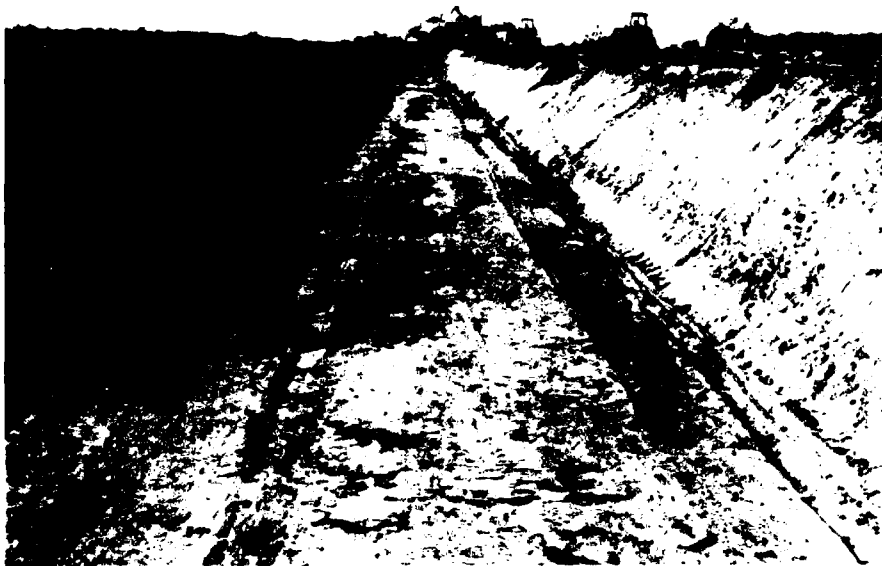


Figure 32. Embankment inspection trench ready for impervious backfill.
16 November 1983. Photo taken at station 147+00, looking west.

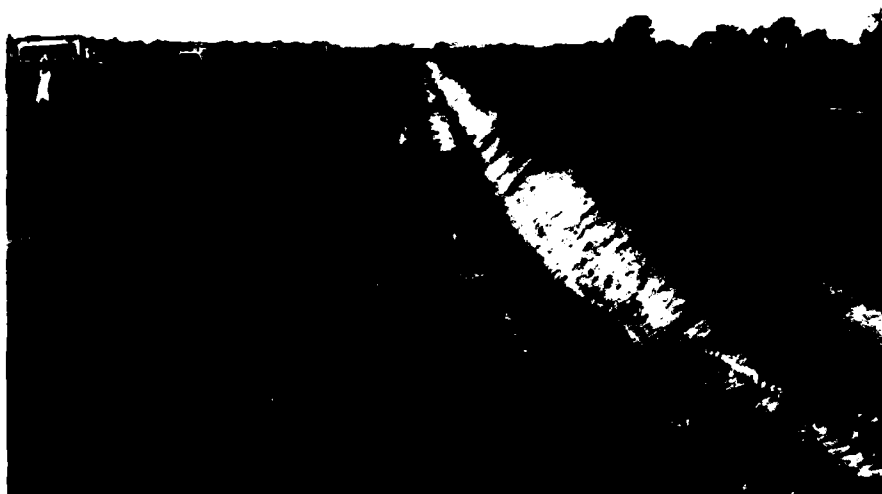


Figure 33. Embankment inspection trench ready for impervious backfill.
28 October 1983. Photo taken at station 150+50, looking west.

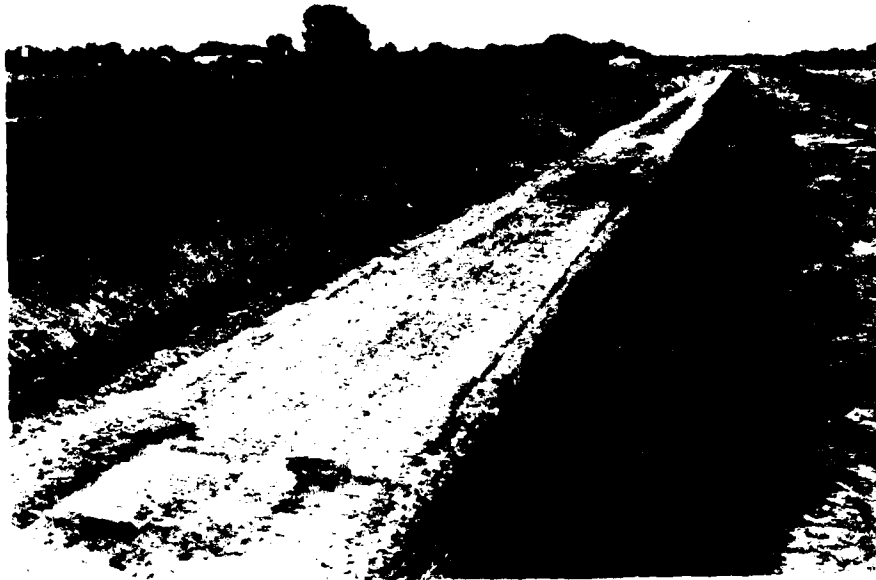


Figure 34. Embankment inspection trench ready for impervious backfill. 16 September 1983. Photo taken at station 172+00, looking east.

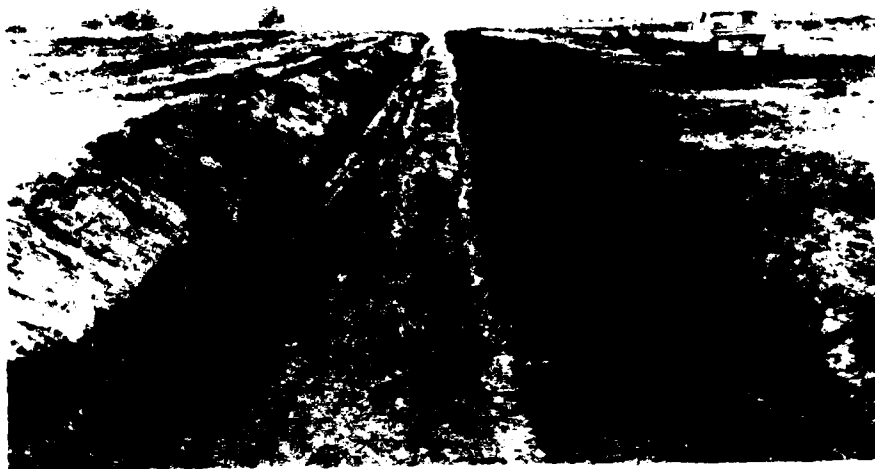


Figure 35. Embankment inspection trench ready for impervious backfill. 16 September 1986. Photo taken at station 186+00, looking east.



Figure 36. Embankment inspection trench ready for impervious backfill. 25 July 1983. Photo taken at station 191+00, looking west.



Figure 37. Embankment inspection trench ready for impervious backfill. 20 July 1983. Photo taken at station 209+50, looking east.



Figure 38. Embankment inspection trench ready for impervious backfill.
20 July 1983. Photo taken at station 210+00, looking west.

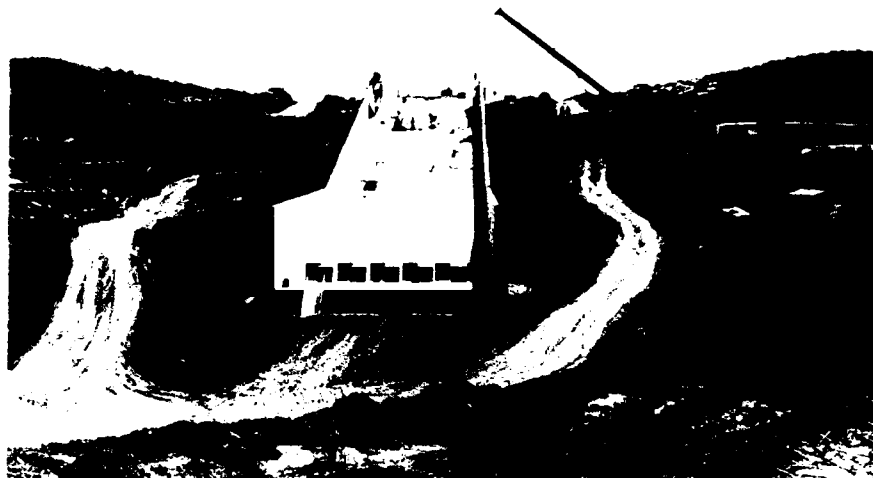


Figure 39. Spillway during construction. Spillway crest perched in the embankment.



Figure 40. Spillway foundation being prepared for backfill with sand filter blanket and protective slab. 9 April 1983.



Figure 41. Spillway wall footing excavation on right side of stilling basin ready for protective coating with pneumatic concrete. 6 April 1983. Spillway training wall footings in-place.



Figure 42. Spillway foundation being prepared for backfill with filter blanket and protective concrete. 5 April 1983.



Figure 43. Spillway foundation being prepared for backfill with filter blanket and protective concrete. 8 April 1983.



Figure 44. Spillway foundation ready for backfill with filter blanket and protective concrete. 9 April 1983.



Figure 45. Spillway foundation being prepared for backfill with filter blanket and protective concrete. 9 April 1983.

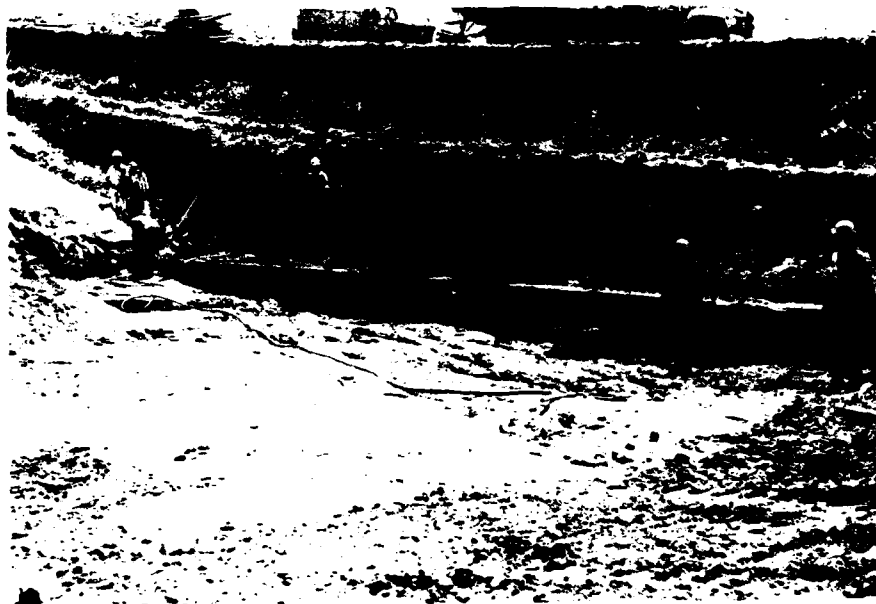


Figure 46. Spillway stilling basin foundation being prepared for back-fill with filter blanket and protective concrete. 11 April 1983.

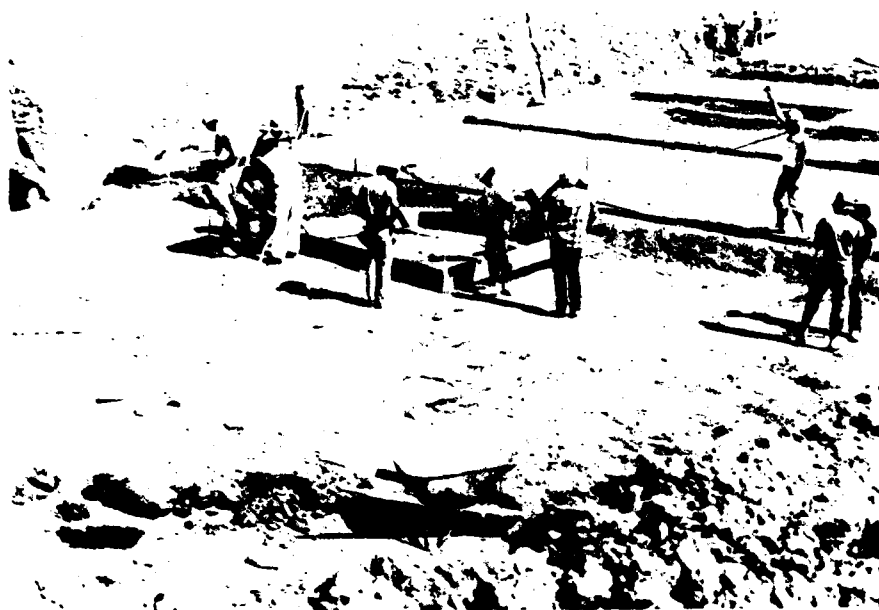


Figure 47. Spillway stilling basin foundation being prepared for back-fill with filter blanket and protective concrete. 12 April 1983.



Figure 48. Spillway foundation. Key trench at spillway station 12+82 being prepared for backfill with reinforced concrete. 15 April 1983.



Figure 49. Spillway foundation. End sill excavation ready for protective coating with gunite.



Figure 50. Spillway foundation - end sill trench. Void space observed behind pneumatic concrete resulted in deterioration of clay shale. Pneumatic concrete less than $1\frac{1}{2}$ -inch required thickness.

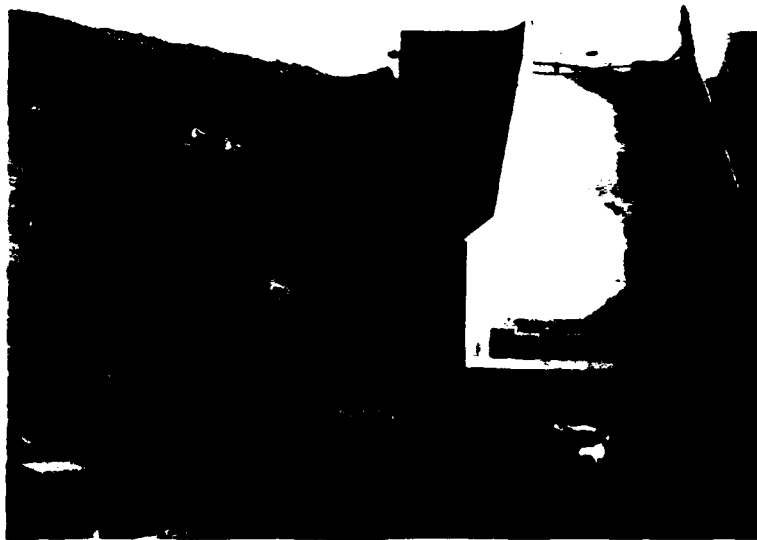


Figure 51. Excavation adjacent to right spillway training wall being prepared for backfill with select impervious fill. 3 March 1984.



Figure 52. Foundation adjacent to right spillway training wall ready for backfill with select impervious fill. 3 March 1984.



Figure 53. Excavation adjacent to right spillway training wall being prepared for backfill with select impervious fill. 18 April 1984.



Figure 54. Foundation adjacent to right spillway training wall being prepared for backfill with select impervious fill. 18 April 1984.



Figure 55. Foundation adjacent to left spillway training wall ready for backfill with select impervious fill. 7 February 1984.

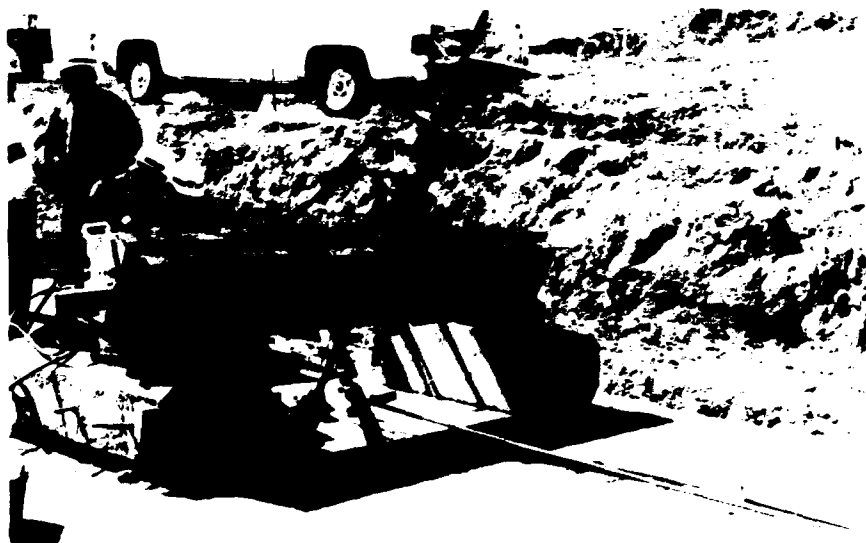


Figure 56. Foundation anchor pull-out test in progress. Test was conducted on 15 April 1983 at spillway station 11+70.



Figure 57. Drop structure constructed in diversion channel adjacent to spillway discharge channel. Photo looking east.

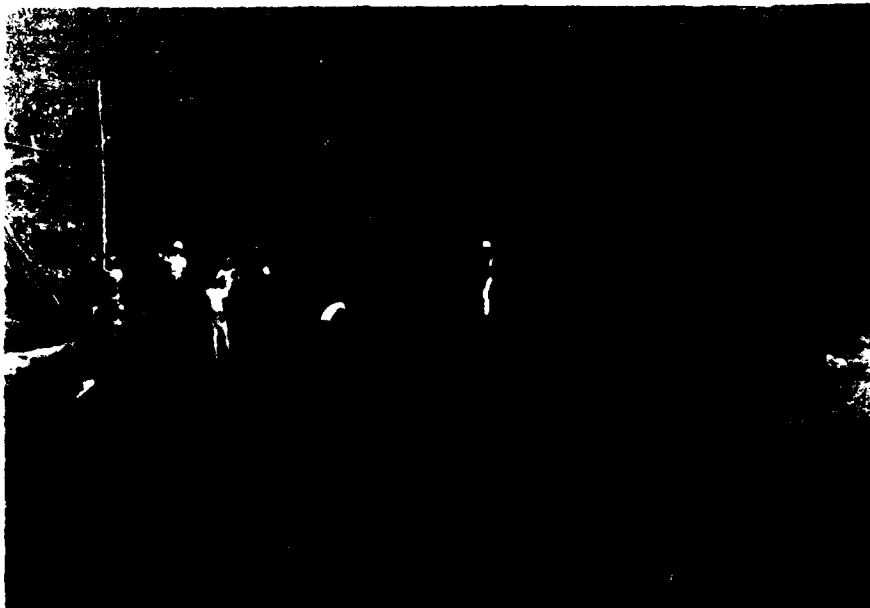


Figure 58. Drop structure foundation being prepared for backfill with protective concrete. 7 December 1982.

FINAL FOUNDATION REPORT

JOE POOL LAKE

APPENDIX I

FOUNDATION ANCHOR PULL-OUT TEST DATA

Joe Pool Spillway - Anchor Pull-Out Test - 15 April 1983

Location of Test: Spillway Station 11+70 offset 20 ft left of center-line.

Description of Anchor: No. 11 rebar grouted in 6-inch diameter hole, 15 feet deep, at 59° from horizontal.

Results of Test:

<u>GAGE NO. 1</u>					<u>GAGE NO. 2</u>	
<u>PSI</u>	<u>TONS</u>	<u>TIME</u>	<u>READING</u>	<u>ACCUM MOVEMENT(IN.)</u>	<u>READING</u>	<u>ACCUM MOVEMENT(IN.)</u>
0	0	1029	0.114	0	0.137	0
467	5	1029	0.129	0.015	0.152	0.015
467	5	1034	0.125	0.011	0.149	0.012
934	10	1035	0.151	0.037	0.177	0.040
934	10	1040	0.152	0.038	0.176	0.039
1457	15.6	1041	0.187	0.073	0.212	0.075
1457	15.6	1101	0.202	0.088	0.226	0.089
0	0	1101	0.129	0.015	0.153	0.016
0	0	1106	0.128	0.014	0.152	0.015
467	5	1106	0.163	0.049	0.189	0.052
467	5	1111	0.165	0.051	0.189	0.052
934	10	1111	0.186	0.072	0.210	0.073
934	10	1116	0.185	0.071	0.210	0.073
1401	15	1117	0.204	0.090	0.228	0.091
1401	15	1126	0.211	0.097	0.236	0.099
1868	20	1127	0.236	0.122	0.262	0.125
1868	20	1132	0.241	0.127	0.266	0.129
2335	25	1132	0.269	0.155	0.296	0.159
2335	25	1137	0.281	0.167	0.307	0.170
2802	30	1138	0.330	0.216	0.358	0.221
2802	30	1143	0.350	0.236	0.378	0.241
3269	35	1144	0.396	0.282	0.422	0.285
Crack appeared in work slab						
3269	35	1150	0.426	0.312	0.452	0.315
3736	40	1151	0.500	0.386	0.526	0.389
3736	40	1156	0.543	0.429	0.570	0.433
4050	43.4	1157	0.770	0.656	0.793	0.656
4050	43.4	1200	0.778	0.664	0.802	0.665
2802	30	1201	0.745	0.631	0.768	0.631
2802	30	1206	0.746	0.632	0.770	0.633
1401	15	1206	0.684	0.570	0.706	0.569
1401	15	1211	0.683	0.569	0.704	0.567
0	0	1211	0.597	0.483	0.619	0.482
0	0	1214	0.574	0.460	0.597	0.460

END OF TEST

Joe Pool Drop Structure - Anchor Pull-Out Test - 17 January 1983

Location of Test: Drop structure Station 8+06.5 offset 12 ft left of centerline.

Description of Anchor: No. 11 rebar grouted in 6-inch diameter hole, 15 feet deep, at 60° from horizontal.

Results of Test:

<u>PSI</u>	<u>TONS</u>	<u>TIME</u>	<u>GAGE READING</u>	<u>ACCUM MOVEMENT (IN.)</u>
0	0	1250	0	0
467	5	1251	0.012	0.012
934	10	1256	0.024	0.024
1457	15.6	1301	0.041	0.041
1457	15.6	1316	0.043	0.043
1868	20	1316	0.054	0.054
1868	20	1321	0.056	0.056
2802	30	1326	0.079	0.079
3269	35	1331	0.090	0.090
3736	40	1346	0.101	0.101
3736	40	1351	0.104	0.104
4203	45	1351	0.119	0.119
4203	45	1406	0.129	0.129
2802	30	1406	0.111	0.111
1457	15.6	1411	0.087	0.087
0	0	1426	0.050	0.050
0	0	1435	0.046	0.046
Reset gage to 0.000				
467	5	1435	0.011	0.057
467	5	1440	0.013	0.059
934	10	1440	0.025	0.071
934	10	1455	0.027	0.073
1457	15	1455	0.048	0.094
1457	15	1507	0.052	0.098
0	0	1507	0.009	0.055
1457	15	1508	0.049	0.095
1457	15	1509	0.051	0.097
2803	30	1509	0.111	0.157
4204	45	1510	0.180	0.226

END OF TEST

FILMED
78